AMERICAN GAS ASSOCIATION MONTHLY

Vol. III No. 9

September, 1921

THE man who is tolerant and without revenge, who holds himself above purely personal things and does what he thinks for the common good, who bases all his policies on frankness and fullest justice, is always sure of a measurable degree of success.

—*Warren G. Harding*

WE'RE LATE AGAIN

But until the effects of the printers' strike have quite blown over you will have to agree that a MONTHLY *late is better than no* MONTHLY *at all.*

Gas Chemists Handbook

At the time the Revised Edition of the Gas Chemists' Handbook was announced as ready for distribution May 1, 1921, the work of printing had been practically completed and it was expected that the book would be available well before that date.

Some final corrections, however, delayed the receipt of page proofs until after May 1, 1921, at which time the printer's strike became effective and all further work was held up at our publisher's plant at Easton, Pennsylvania.

So many inquiries are being received from members as to when they may expect delivery of their Handbooks ordered as a result of our original announcement that we are taking this occasion to state that the printer's strike is still effective at our publisher's plant and that the best estimate they have been able to submit is that work on the Handbook can be resumed sometime this Fall.

At the present stage of the printing it would not be practicable to transfer the work to another printer and we must ask the indulgence of our members for the annoyance and delay occasioned by the printers' strike.

Every effort will be made to expedite delivery and we know that when the Handbooks are received our members will find the Revised Edition well worth waiting for.

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FOR STATEMENTS AND OPINIONS CONTAINED IN PAPERS AND DISCUSSIONS APPEARING HEREIN, THE ASSOCIATION DOES NOT HOLD ITSELF RESPONSIBLE

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American Gas Association Monthly

Vol. III SEPTEMBER, 1921 No. 9

Gas Bills

From the Saturday Evening Post, August 6, 1921

During the past six or eight years a large proportion of the gas companies of the country, confronted by rising costs of coal, oil, labor and equipment, and by rate-making bodies that have reflected the popular disinclination to pay higher prices for gas, have been fighting for their very existence.

An important phase of their struggle is a campaign of publicity designed to win the good will of the public they serve and to put their case before it as a matter of equity and fair play. In the long run these policies are pretty sure to accomplish the desired results unless a receivership brings them to an untimely end; and yet the most enlightened programs of directors and high executives are sure to go awry when they cannot command the cooperation of their subordinates who come into direct personal contact with the customers whose good graces they are courting.

Gas-company officials have had so much to say about the hostility of politicians, city councils, public-service commissioners and other rate making bodies that they have sometimes given too little weight to the fact that their most dangerous enemies are men on their own pay rolls who are unfit either by temperament or training to carry out policies that require for their expression suavity, good nature and an honest desire to serve the public. The gas companies were by no means the first of the public utilities to be converted to the wisdom of establishing pleasant relationships with their customers and they have not yet entirely weeded out the rough-tongued subordinates who here and there bring to naught the best intentions of their superiors; and yet they are no longer blind to the requirements of the situation in which they find themselves and there is no reason why, in time, they should not earn as high a place in the general esteem as the telephone companies which have, over a long term of years, given abundant proof of the high valuation they put upon the good will of the public.

Whatever the consumer's personal feeling may be, it stands to reason that he must either be prepared to pay for gas as much as it costs to produce and distribute it or else make up his mind to go without it. Speaking by and large, there is no permanent advantage in buying at a price so low that it throws a loss upon the seller, unless, indeed, it is the buyer's avowed purpose to drive the seller out of business. Futhermore, the one employment in which a thousand men go broke for every one who gets rich is that of nursing old grudges and neglecting the really important affairs of life while waiting for a chance to get even with someone.—*Reprinted by permission from the The Saturday Evening Post, copyright 1921, by the Curtis Publishing Company, Philadelphia, Pa.*

AMERICAN
GAS ASSOCIATION
MONTHLY

Vol. III SEPTEMBER 1921 No. 9

All Roads Lead To Chicago

WITH Chicago as the convention city and the week of November 7th as the date, this year's annual gathering of gas men, the third of its kind held under the auspices of the American Gas Association, is going to be a noteworthy one in the history of the industry.

Indications point to a large and representative attendance. Reservations already made at the Congress and Auditorium Hotels convention headquarters, leave no doubt as to that. The manufacturers are going to be there strong, with one of the best exhibitions ever held. There are very few spaces remaining, as will be seen from the list of exhibitors given in another section of this magazine.

Programs for both general and sectional sessions deal with matters of pressing importance to every individual in the industry. Speakers and authors have been chosen with great care, the idea being to make this year's gathering a veritable roundtable of discussion in which the big problems facing the industry will be met squarely on the floor of the convention by the ablest men in the business and workable plans adopted for their solution. This period of reconstruction through which all business is passing, calls for practical and constructive thinking. It also calls for a lot of sound American optimism. Incidentally, those are the features which are to characterize the Chicago meeting this year.

The opening day of the convention will be Monday, November 7th. The Manufacturers Section will hold its business session in the morning and the exhibits, segregated into divisions and to be located on the first and second floors

of the Congress Hotel, will be ready for inspection. Since Tuesday is election day, the opening general session of the convention will be held on Wednesday morning and will be followed by two other general sessions, on Thursday and Friday mornings.

The sectional sessions devoted to the accounting, commercial, publicity and advertising, and technical problems of the business will be held on the afternoons of the same days the general sessions are held, as has been the custom heretofore. The president's reception, followed by a dance and supper, will be held Wednesday evening. The annual banquet, followed by a dance, will be held Thursday evening.

In addition to President Munroe's address at the general session on Wednesday morning, November 9, one of the outstanding features will be an address by Charles Coolidge Parlin, head of the division of commercial research of the Curtis Publishing Company. Mr Parlin is a keen student of business problems and enjoys an enviable reputation as a public speaker. The message he will bring to the convention will be a valuable one. At this same session there will be made public the report of the Rate Structure Committee, J. D. Shattuck, chairman.

Thursday morning's session promises to be equally as interesting as the opening session. According to the tentative program, the report of the Committee on Complete Gasification of Coal will be given at this time, and will be followed by two papers, one entitled "Personnel in

Congress Hotel - Chicago

The Gold Room of the Congress Hotel

Utility Companies," by W. H. Rogers of the Public Service Company of New Jersey, and the other, "Marketing Gas Securities Locally," by Robert M. Searle, of the Rochester Gas and Electric Company, Rochester, New York. Both papers deal with up-to-the-minute subjects and will be eagerly awaited by the industry.

Samuel Insull, president of the Commonwealth Edison Company of Chicago, will be the principal speaker at Friday's session. He will talk upon the important subject of public relations and suggest ways and means of bringing about a better understanding between company and public. It is expected that the various directors of state committees on public utility information, who will be present at the convention at the invitation of the Association, will supplement Mr. Insull's address by giving personal accounts of their work and experiences. At this same session, the Committee on Customer Service, J. B. Myers, chairman, will render its report; and there will be given a screen presentation of the Association's motion-picture film entitled: "The Spirit of Service."

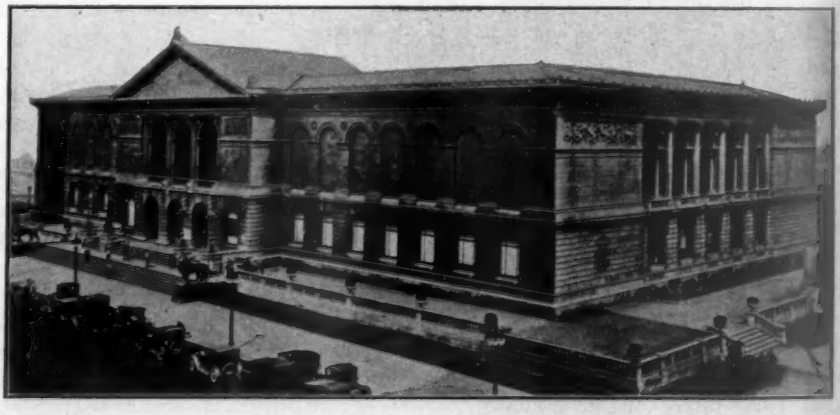
In the three afternoon sessions devoted to the Accounting Section, there are to be several papers presented of more than usual interest. Two of these are: "Preparation and Presentation of Cases of Utility Companies Before Public Service Commissions," by W. G. Woolfolk, of the William A. Baehr organization, Chicago; and "Federal Income Tax as Applied to Gas Companies," by H. W. Forbes, of Sherman and Sterling, New York City. Reports to be presented will cover such important subjects as statistics on Gas Company Fire Losses to induce

fire underwriters to scale down their premium rates; Establishment of a Uniform Practice in Maintaining Continuous Inventories of Fixed Capital; Office Labor-Saving Devices and Systems and exchange of accounting information through State representatives.

A number of valuable reports will be presented during the sessions of the Commercial Section, one session being held jointly with the Publicity and Advertising Section. At this session Carl B. Wyckoff, of the Emporia Gas Company, Emporia, Kansas, will tell of the publicity problems that faced him when he came to Emporia and the methods used in solving them. At other sessions there will be committee papers on water heating, merchandising appliances, industrial fuel and lighting.

In the Technical Section, the recent shortage of gas oil with the consequent unprecedented rise in price have necessitated a careful consideration of the extent and effect that these conditions would have on the present processes of manufacturing and the character of gas to be supplied in the future. Much importance is therefore attached to the reports of the Carbonization Committee, Gas Oil Committee, Committee on Increasing Distribution Capacity, and Committee on Complete Gasification of Coal. Among the important papers to be read are: "What Goes on in a Water Gas Machine," by M. E. Benesh, of the Peoples Gas Light and Coke Company, Chicago; "Problems Involved in Mixing and Distributing Gases of Different Compositions and Specific Gravities," by H. E. Bates, also of the Chicago company; "Why should Gas Companies Sell Their Tar to Distillers Instead of Working It Themselves?" by R. P. Perry of the Barrett Company, New York; and "Utilization of Compressed Air for Clearing Housepiping," by J. T. Griffin, of the Consolidated Gas, Electric Light and Power Company, of Baltimore, Md.

A cordial invitation is extended to all members of the Association to attend this year's gathering in Chicago.



Chicago Has Reasons Enough to be Proud of Her Art Institute.

Exhibition Spaces Allotted

The notice of space allotments was mailed to all exhibitors on August 4.

Elizabethan Room (demonstrating their product with gas connection)

Exhibitors will be found in the following locations:

1. Welsbach Company, Gloucester, N. J.
2. Welsbach Company, Gloucester, N. J.
3. G. F. Schmidt, Chicago, Ill.
4. Century Stove & Mfg. Co., Johnstown, Pa.
5. American Radiator Co., Chicago, Ill.
6. Weir Stove Co., Taunton, Mass.
7. Milwaukee Gas Specialty Co., Milwaukee, Wis.
8. Kennedy-Toombs Co. Inc., New York, N. Y.
9. Quick Meal Stove Co. Div., St. Louis, Mo.
10. The Kompak Co., New Brunswick, N. J.
11. The Crandall Pettee Co., New York, N. Y.
12. The J. H. Grayson Mfg. Co., Athens, O.
13. The Cutler-Hammer Mfg. Co., Milwaukee, Wis.
14. James B. Clow & Sons, Chicago, Ill.
15. Claus Automatic Gas Cock Co., Milwaukee, Wis.
16. A. H. Wolff Gas Radiator Co., New York, N. Y.
17. The Scott Gas Appliance Co., Washington, D. C.
18. General Gas Light Co., New York, N. Y.
19. Chicago Vitreous Enamel Product Co., Cicero, Ill.
20. Surface Combustion Co., New York, N. Y.
21. Malleable Iron Range Co., Beaver Dam, Wis.
22. The Michigan Stove Co., Detroit, Mich.
23. The Estate Stove Co., Hamilton, O.
24. Johnson Gas Appliance Co., Cedar Rapids, Ia.
25. H. A. Wilson Co., Newark, N. J.
26. National Stove Co. Div., Lorain, O.
27. The Improved Appliance Co., Brooklyn, N. Y.
28. Armstrong Cork Co., Pittsburgh, Pa.
29. Detroit Stove Works, Detroit, Mich.
30. The G. S. Blodgett Co., Burlington, Vt.
31. Walker & Pratt Mfg. Co., Boston, Mass.
32. Strause Gas Iron Co., Philadelphia, Pa.
33. New Process Stove Co., Div., Cleveland, O.
34. Roberts & Mander Stove Co., Philadelphia, Pa.
35. Reliable Stove Co. Div., Cleveland, O.
36. Wm. M. Crane Co., New York, N. Y.

Florentine Hall and Adjoining Rooms, Second Floor, Congress Hotel (dead exhibits)

38. Comstock Castle Stove Co., Quincy, Ill.
39. The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
40. General Gas Appliance Co., New York, N. Y.
41. Lindsay Light Co., Chicago, Ill.
44. Reznor Manufacturing Co., Mercer, Pa.
45. Rathbone, Sard Co., Albany, N. Y.
46. The Ofeldt Gas Fired Boiler Co., Nyack, N. Y.
47. The Cleveland Heater Co., Cleveland, O.
48. The Lovekin Water Heater Co., Philadelphia, Pa.
49. Chambers Manufacturing Co., Shelbyville, Ind.
50. Robertshaw Manufacturing Co., Youngwood, Pa.
51. Peninsular Stove Co., Detroit, Mich.
52. A-B Stove Co., Battle Creek, Mich.
53. Superior Meter Co., Brooklyn, N. Y.
56. The Western Gas Construction Co., Fort Wayne, Ind.
57. The Western Gas Construction Co., Fort Wayne, Ind.
58. H. Mueller Manufacturing Co., Decatur, Ill.
59. Acme Brass Works, Detroit, Mich.
60. Pittsburgh Meter Co., Pittsburgh, Pa.
61. The West Gas Improvement Co. of America, New York, N. Y.
62. Quigley Furnace Specialties Co., New York, N. Y.
63. Bartlett Hayward Co., Baltimore, Md.
64. The U. G. I. Contracting Co., Philadelphia, Pa.
65. The Koppers Co., Pittsburgh, Pa.

66. The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
67. Bailey Meter Co., Cleveland, O.
68. The Foxboro Co. Inc., Foxboro, Mass.
69. Taylor Instrument Companies, Rochester, N. Y.
70. John J. Griffin & Co., Philadelphia, Pa.
71. American Meter Co., New York, N. Y.
72. D. McDonald & Co., Albany, N. Y.
73. Johns-Manville, Inc., New York, N. Y.
74. Johns-Manville, Inc., New York, N. Y.
75. The Roberts Brass Mfg. Co., Detroit, Mich.
76. S. R. Dresser Mfg. Co., Bradford, Pa.
77. The Lattimer Stevens Co., Columbus, O.
78. Equitable Meter Co., Pittsburgh, Pa.
79. National Tube Co., Pittsburgh, Pa.
80. The Sprague Meter Co., Bridgeport, Conn.
81. The Gas Age-Record, New York, N. Y., and Chicago, Ill.
82. The Gas Industry, Buffalo, N. Y.
83. American Gas Journal, New York, N. Y.
84. The Intercolonial Gas Jour. of Canada, Hamilton, Canada.
85. The Eclipse Stove Co., Mansfield, O.
86. The Sands Manufacturing Co., Cleveland, O.
87. Hugo Manufacturing Co., West Duluth, Minn.
88. Hale Manufacturing Co., Chicago, Ill.
93. George M. Clark & Co. Div., Chicago, Ill.
94. Eriez Stove & Mfg. Co., Erie, Pa.
95. Humphrey Co. Div., Kalamazoo, Mich.
98. The Bryant Heater & Mfg. Co., Cleveland, O.
99. George D. Roper Corp., Rockford, Ill.
100. Pittsburgh Water Heater Co., Pittsburgh, Pa.
103. The Hoffman Heater Co., Lorain, O.
104. Kalamazoo Loose Leaf Binder Co., Kalamazoo, Mich.
105. Ruud Manufacturing Co., Pittsburgh, Pa.
108. Addressograph Co., Chicago, Ill.

Reservations should be made promptly by writing direct to the Chicago Hotels.

Congress Hotel and Annex

Michigan Avenue and Congress Street

Chicago

ONE PERSON

Room, detached bath $3.00, 3.50, 4.00, 5.00 per day—Room, private bath $5.00, 6.00, 7.00, 8.00, 10.00 per day

TWO PERSONS

Room, detached bath $5.00, 6.00 per day—Room, private bath 7.00, 8.00, 9.00, 10.00, 12.00 per day

SUITES

Two connecting rooms, private bath two persons $10.00 per day and up—Three or four persons $15.00 per day and up.

CORNER SUITES

Parlor, Bedroom and private bath $15.00 to $40.00 per day—Parlor, 2 Bedrooms and private bath $20.00 to $40.00 per day.

Parlors can be arranged with one to five bedrooms and private baths

Auditorium Hotel

Michigan Boulevard and Congress street

Chicago

Room without bath, single $2.50 per day and up

Room without bath double $4.00 per day and up

Room with bath single $4.00 per day and up

Room with bath double $6.00 per day and up

J. J. Calvey
Manager

To Those Responsible for Publicity in Gas Companies.

(The following important announcement has been issued to gas company members of the Association. If you are in charge of publicity for your company and have not received your copy, together with publicity idea sheets, write us immediately.)

THE big annual convention of the GAS INDUSTRY OF THE UNITED STATES, represented by the American Gas Association, will, as you already know, be held in Chicago, November 7th to 11th, inclusive.

From now on until that event, it is planned to carry on the most intensive publicity programme ever attempted in behalf of this great industry, to get ITS FULL STORY ACROSS TO THE PUBLIC—OUR CUSTOMERS.

This IS NOT a job that can be entirely done from these headquarters.

YOU MUST HOLD UP YOUR END. The Association wants every man responsible for publicity in the industry TO GET BUSY: BUSY USING EVERY CONCEIVABLE LOCAL MEANS OF TELLING, NOT ONLY THE MARVELOUS STORY OF GAS DEVELOPMENT IN THE UNITED STATES, BUT YOUR OWN LOCAL STORY.

TELL IT—

Through NEWS PUBLICITY: Interviews with your officials about new development work, financing, your company's expectations, historical matter—anything that "will break into print" favorable to your company and the industry.

Through ADVERTISING: Give renewed close thought to your advertising, make it ring 100 per cent in an effort to obtain good will for you and build for the prosperity and further rapid growth of the industry.

Through SPECIAL STUNTS: Rake up some old bills and show how cheap present gas rates are; find the housewife who had the first gas range in town and get an interview; offer some prizes to school pupils for the best paper on what gas has done for your community; have some speakers before your local clubs on utility subjects; get out some statistics telling how much oil and coal you can use in a year and how much fuel you save the country through converting it into gas and serving the community from a central station plant; tell the community about gas for INDUSTRIAL PURPOSES—the many uses to which it is put nationally and locally.

Through YOUR MONTHLY BILLS: You can use the back of them or enclose some special matter in the bill envelopes about the business.

From the foregoing suggestions any live publicity man can pick enough matter to keep him over-busy during the period.

From time to time, in the course of the next ten weeks, we will send you publicity ideas.

"Work them over" to apply locally and fit your situation.

Feel free to call on us for help or suggestions at any time.

Backing up your local publicity programme, we at headquarters will carry on an intensive newspaper and magazine publicity campaign.

LET'S GO—AND GO HARD!

At the end of the ten weeks period we plan to check up on the work throughout the country. What the various publicity men have been able to do will be recounted and published for the benefit of the industry. We know some enviable records will be set up.

LET'S GO! LET US HAVE ANY GOOD IDEAS YOU DEVELOP THAT CAN BE PASSED ON TO THE OTHER PUBLICITY MEN IN THE INDUSTRY.

LET'S PUT THE INDUSTRY ON THE MAP AND BEFORE OUR PUBLIC IN THE NEXT TEN WEEKS IN A WAY THAT WILL MAKE US PROUD OF OUR RECORD.

Entertainment Features

There will be assembled at the Congress and Auditorium Hotels during the Convention week of the A. G. A. nearly 1500 gas men, manufacturers, their representatives and guests.

It is hoped that you will be among those present, for this is going to be a rousing meeting, whose keynote will be optimism for the immediate future and a revival of business activity for our industry.

The business sessions will begin on Wednesday morning, November 9th and extend through to Friday evening, November 11th.

The Entertainment Features will include the following functions:

Wednesday evening, November 9th, 9 o'clock, Congress Hotel, President's Reception, followed by dancing during which will be served a buffet supper. ($2.00 per person).

Thursday evening, November 10th, 7:30 o'clock, Congress Hotel Annual Banquet, followed by dancing. ($7.00 per person).

Table reservations for the Banquet will be made so far as possible to meet the wishes of members and in the order of their receipt at Association headquarters.

Make reservations accompanied by remittance direct to Association headquarters.

Mr. Gadsden on Taxation

ON behalf of the American Electric Railway Association, American Gas Association and the National Electric Light Association, Philip H. Gadsden has submitted the following brief on the taxation of public utilities to the House Ways and Means Committee:

1. We urge that public utilities be placed in a special class for the purpose of taxation, so that the burden of Federal taxation to be imposed upon them may be determined in the light of the fact that they are regulated industries. Public utilities are already by law treated as a special class for everything except taxation. Their rates and the selling price of their products are fixed by law. They are compelled to buy their labor and material in the open market and to sell at prices fixed under regulation. The public utilities are segregated in a separate class with reference to their operating expenses. The kind and quality of the service rendered by them is largely specified by law. The ordinary business man can adjust his affairs to the varying conditions of the time. In periods of depression he can retrench, reduce his activities, and cut off his expenses. The individual can do the same. The utilities can not. They can neither adjust their revenues to meet increasing operating expenses or increased taxation, nor curtail their facilities for business operations.

Again, they are placed in a special class so far as undertaking new business is concerned. The merchant or manufacturer can refuse to take on business when he sees no profit in it. Public utilities must furnish electric transportation, gas, electric light, and power to all who apply for it under regulations fixed by law.

But when it comes to taxation, public utilities have up to this time been treated as any other business corporation, notwithstanding the fact that a public utility's return on its investment is limited by law, whereas the ordinary business corporation is free to make any profit which business conditions will permit.

For these reasons we urge the Ways and Means Committee to consider adopting a permanent policy of setting aside all public utilities—that is, regulated industry, in a special chapter to be treated separately for the purposes of Federal taxation.

2. The American Electric Railway Association, American Gas Association, and the National Electric Light Association, earnestly protest against any increase in the normal income tax on gas, electric railway, and electric light and power companies, and urge that the normal income tax on public utilities be kept as at present at ten per cent and not increased along with business corporations generally as has been proposed. The reason for this distinction is apparent to anyone who is conversant with the history of public utilities during the last four or five years. It is admitted that of all classes of business enterprise, the public utilities have suffered the greatest injury as a result of the war. For several years when every other class of business was prospering beyond anything ever anticipated, the net income of the public utilities month by month gradually diminished; in many cases

dividends on stocks were passed, and even interest on bonds left unpaid at a time when industry generally was enjoying an unparalleled prosperity.

We urge, therefore, that it is only fair that the burden of Federal taxation on public utilities should be made lighter than on business generally. Their rates for service, being regulated by law, are not easily adjusted to increased expenses. Owing to the local character of electric railways, gas, and electric light and power companies, it was not found practicable during the war for Congress to take any action to relieve their condition such as was taken in the case of the steam railroads. They have had to bear the full brunt of increases in the cost of labor and materials without any assistance from the Federal Government, notwithstanding the fact that it is now clearly recognized that the services they render are essential to the national life. Here is an opportunity, however, for Congress to show its appreciation of the plight of the public utilities of this country and afford them some measure of relief. It was in recognition of these facts that the committee of the National Industrial Conference Board in its report recommended that the income tax on public utilities be retained at ten per cent.

3. Tax on undistributed income: A tax on undistributed income would fall with peculiar hardship upon public utilities. In the first place, in a regulated industry there is no opportunity for unusual or excessive earnings. The rate of return is placed at a maximum which rarely exceeds eight per cent, so that with public utilities it is not possible to declare an eight per cent dividend and retain an equivalent amount in the treasury of the company as undistributed earnings. The reason which is generally urged to support the tax on undistributed income does not apply to regulated industry. There is one reason, however, which when properly understood, would seem to show that it is clearly against the public interest that such a tax should be applied to public utilities. Owing to the extraordinary increase in the cost of operations, both during and since the war, with the tardy and meager increases in rates which have been allowed, the public utilities as a class have been forced to suspend the payment of dividends and to utilize any small amounts of net income for the purpose of providing for those necessary extensions and betterments of their service which are insistantly demanded of them by the public.

It is generally recognized that the credit of public utilities has been affected injuriously by the experiences through which they have been forced to go. For years they have been unable to secure the additional new capital necessary to provide the extensions and betterments to plants and facilities to keep apace with the development of their respective communities. In this connection I refer the committe to that portion of the report of the senate committee on reconstruction and production referring to public utilities. This report shows that public utilities have had to postpone extensions and enlargements of their plants and facilities for years. At the same time, a certain amount of such extensions and betterments have had to be made. They have been made out of the net income of the public utilities which otherwise might have been declared by way of dividends.

The tax upon undistributed income of public utilities would still further reduce the available funds now being used for extending the railway, gas and electric light and power services to the consumers of this country. If such a tax is seriously considered by this committee we would urge that either public utilities be expressly exempted, or that the paragraph should be so worded as not to apply to earnings which are reinvested or held for reinvestment in the property within twelve months after the year in which they accrue, or which, together with the earnings distributed, do not exceed, say, ten per cent on the value of the property.

4. Tax-exempt securities: While public utilities, unfortunately, are not subject to any excess-profits tax, and while their income taxes amount to a very small amount of money—they amounted in 1918 to only about $12,000,000 for the three industries I represent—while it is true that our stockholders and bondholders have suffered so that their taxes have been very largely reduced, I want to call the committee's attention to the serious burden which the excess-profits taxes and the high surtaxes have in an indirect way upon the public utility business.

We have recently had a study made of the effect of the surtaxes and the income taxes upon the sale of public utilities securities. We have been very much disturbed to find that under the present fiscal and taxation laws of this Government the taxpayer who is subject to a surtax of over three per cent can not afford to buy a public-utility security paying eight per cent or less in preference to a five per cent tax-exempt bond. That means that practically the only purchases of our securities must come from the people who are in the $10,000 class. The reason for it is that the public utility, being regulated by law, its earnings being kept down to practically eight per cent, it, of course, cannot have any long-time issue securities of a greater rate of interest.

I am not trying to inject an argument for exemption of securities, but I am showing how vitally interested public utilities are in any law which will spread out the burden of taxation and which will make it possible for Congress to reduce, if not cut out, these very high income taxes. The public utilities of this country, including the steam railroads, must every year find new money for their extensions and betterments. The group I represent requires about $750,000,000 a year. Altogether, including the steam railroads, we need about $2,000,000,000 of new money every year. That money must be obtained in the open market in competition with these municipal securities. No man with a high income can afford to buy our securities, because we cannot afford to pay more than six seven or eight per cent, as the laws say we cannot get more than that amount. The investor is being driven by that process away from public utilities into municipal bonds, building schoolhouses and courthouses and public roads. The effect of that is this: In the first place, the $2,000,000,000 of betterments which the public requires can not be made. They have not been made in four years. We estimate that public utilities are behind in actual necessities—that is, the three public utilities I represent—at least a billion and a quar-

ter now, owing to the inability to get money.

The second effect is that as we fail year by year, owning to our inability to get this additional new capital to measure up to the standard and growth of our various communities, and fail to render the facilities which the communities must have, there is a growing dissatisfaction in the communities against our service and an increasing demand on the part of the population to take them over. It is quite apparent that the public will say: "If you cannot raise money, we can; we can get all the money we need at 5 per cent." Therefore, we reach this anomalous situation that while the political policies of this Government have been definitely and firmly fixed in opposition to the municipalization of these utilities, the financial and fiscal policies of the Government are inexorably driving us into it. Therefore any tax whose tendency is to spread out the burden; any tax which will raise money sufficient to enable this Government to relieve the higher brackets on the surtax and the income tax, is working in the interest of the public utilities and immediately in the interests of the users of those facilities all over the country.

Charles Otis Bond

C. O. BOND died at his home in Collegeville, Pa., on Tuesday, August 2nd. He has been ill for several months and had undergone an operation which failed to save his life.

Mr. Bond was one of the leading illuminating experts of this country. He had served a term as President of the Illuminating Engineering Society, and was a member of the American Gas Association and of the Meridan Club. He specialized on research and experimental work tending to improve gas lighting equipment and methods. His most important achievement in this line was the standardizing of apparatus for improving the economic efficiency of gas burners and mantles. This work he engaged in as Director of the physical laboratory of the United Gas Improvement Company, and it brought him a world-wide reputation.

He was the inventor of the "dew-point" hygrometer for determining the lowest temperature which gas reached in the mains.

GENERAL SECTION

CHAIRMEN OF GENERAL COMMITTEES ORGANIZED TO DATE

Accident Prevention—CHARLES B. SCOTT, Chicago, Ill.
Amendments to Constitution—WM. J. CLARK, Mt. Vernon, N. Y.
American Engineering Standards Committee, Representative on—A. H. HALL, New York, N. Y.
Award of Beal Medal—CHARLES A. MUNROE, Chicago, Ill.
Calorific Standards—J. B. KLUMPP, Philadelphia, Pa.
Chamber of Commerce, Representatives in—GEORGE B. CORTELYOU, New York, N. Y.
Convention Program—J. B. KLUMPP, Philadelphia, Pa., G. I. VINCENT, Vice-Chairman, Syracuse, N. Y.
Cooperation with Educational Institutions—J. A. NORCROSS, New Haven, Conn.
Devising Unit for Gas Measurment—R. B. BROWN, Milwaukee, Wis.
Educational—WALTON CLARK, Philadelphia, Pa.
Finance—R. H. ROSENQUEST, Bronx, N. Y.
Gas Safety Code—W. R. ADDICKS, New York, N. Y.
National Fire Protection Assn., Membership in—W. R. ADDICKS, New York, N. Y.
Nominating—CHARLES L. HOLMAN, St. Louis, Mo.
Rate Fundamentals—R. A. CARTER, New York, N. Y.
Standard Gas Appliance Specifications—W. T. RASCH, New York, N. Y.
United States National Committee of the International Commission on Illumination, Representatives on—HOWARD LYON, New York, N. Y.

Safety Rules for Gas Plants

From The Accident Prevention Committee

CHARLES B. SCOTT, Chairman

THE importance and desirability of a code of rules governing Industrial Safety is generally recognized and executives in gas companies are, or should be as vitally interested in this means of protecting the lives and health of their employes as are the executives in other industries.

The making of safety rules is by no means a one-man job, but should represent the co-operative efforts of employers, employes, safety engineers and technical men, combined with the lessons taught in the school of experience. Safety rules to be effective must be such that they will appeal to the common sense of each individual and therefore must be clear, concise and logical in order to prevent any misunderstanding as to their intent and meaning.

The Accident Prevention Committee of the American Gas Association is preparing to issue in the near future a simple code of rules applying to the Gas Industry and, appreciating the difficulties to be met with in attempting to include a multiplicity of details, will proceed with the thought of brevity and simplicity constantly in mind. The rules so compiled will be fundamental in character, applying to those conditions that are met with in practically all gas properties. However, local conditions are so widely varied that detailed rules practical with one company may not apply to other companies and it is therefore the duty of the executive, or those appointed by him, to so amplify these basic rules that they may better meet local conditions. It is with this thought in mind and the desire to assist the individual company as far as possible in the preparation of its safety rules that this article is written.

To facilitate the compiling of those hazardous conditions and practices that are peculiar to the locality and which can be governed or regulated by an established rule, the operations of the gas company should be separated into approximately three divisions: The Production Division which includes the plants, pumping stations, holder locations, etc. The

Distribution Division which comprises the laying and maintenance of mains, services and drips and the operations incident to pressure vaults; and the Division of Customer's Premises including house piping, appliance installation, fixture hanging and the setting and reading of meters. The listing of the physical and manual hazards incident to the work in each of these divisions will facilitate the making of rules that will apply to each.

The Accident Prevention Committee of the American Gas Association while engaged in the preparation of simple fundamental rules for safety had brought to its attention many good rules which could not be incorporated. This inability was due to the fact that the practices or conditions involved were not very general but usually found in the plants serving the larger cities. It was believed by this committee that some of these rules should not be entirely discarded or lost sight of and it was decided to publish them as a part of this article for the benefit of certain member companies. These rules are as follows:

PRODUCTION

Cleaning Purifying Boxes:

Never allow one man to clean purifying boxes. All valves must be closed, room well ventilated and no open flame of any description should be allowed near.

Blowing Purifying Box Water Seals:

Provide either a safety seal on the gas inlet or an outside water control for filling the seals without entering the purifying room.

Drawing Charges From Retorts:

No men should be allowed in the pit of the retort house while charges are being drawn. They may be scalded by hot water. This applies particularly to benches that are clinkered from the front.

Valve Controls On Water Gas Machines:

On account of the danger of opening or closing valves in improper sequence, an interlocking safety device should be installed.

Holder Alarms:

Where holders are isolated or where they cannot be readily observed from gas plants or pumping stations, an alarm device to indicate high or low point should be installed.

Electrical Installations:

This is a very important subject and should receive very careful consideration. Electric controls such as switches, fuses, etc. should never be placed in rooms or enclosures where gas is liable to accumulate. All electric lamps in the meter, condenser and purifying rooms should be enclosed by vapor proof globes. The sparking of motor brushes should be prevented and rules made to insure the proper use and maintenance of all electrical equipment.

Stairways and Elevated Structures:

A careful inspection of elevated stairways and platforms should be made periodically to insure their safe condition. All such structures should be provided with standard toe boards and hand rails.

Moving Parts:

Particular attention should be given to guarding moving machinery such as fly wheels, couplings and blower fans and the replacing of guards when removed for the purpose of repairing machinery. The employes' attention should be drawn to the danger of loose fitting clothing when working around machinery.

DISTRIBUTION

Laying and Maintenance of Gas Mains:

Rules governing the placing and removing of trench braces should be prepared and also for the refilling and tamping of trenches. Arrange for inspection of refilled trenches after rain storms and for a stipulated period after trenches are filled. A spring inspection of all trenches made during the winter is valuable. A record may be kept of all inspections for future reference.

Tapping Mains:

The dangers attached to the use of tapping machines is apparent to all except, as is many times the case, to the man who is actually operating the machine. This laxity on the part of the operator is proven by the many accidents that have occurred from this cause. The following rules regulating the use of tapping machines are in force in a large gas company and may be taken as a guide in preparing rules that will meet local conditions.

"Tapping machines must not be used in tunnels, manholes or other places not well ventilated without the use of a gas mask or respirator. Manhole covers must be removed and where possible the paving must be broken down over tunnels."

"Tapping machines must be removed only by the foreman or the tapper and then only in the presence of a second person."

"Tapping machines must not be used except at the direction of the foreman in charge of the work."

Cutouts:

Removing a section of main is an operation that has many hazardous features and rules covering this class of work should be carefully thought out. A foreman should assume personal charge but should do none of the actual manual work himself. When a man is working he is interested in the progress and completion of the particular job and does not give attention to the hazards involved. Another dangerous condition in connection with this subject is the possibility of electric sparks caused by the mains being electrically charged from ground currents. The ignition of the escaping gas by these sparks is a frequent cause of accidents. To prevent this wire jumpers should be attached to the main on both sides of the cut. The operation of bagging off mains should also be covered by rules.

Gas Leaks:

The hazard of fires due to leaking gas mains or services should be guarded against by prohibiting employes smoking while engaged in digging for the leaks. The employes also should be cautioned against allowing any persons near the excavation who are smoking and to warn every one against setting the gas on fire.

In addition to regulating the quality of the work on customer's premises and the safe manner in which it is performed by the employe, the factor of safety to the public must be considered. A number of safety rules can be put in force by the employes for the protection of the customer. Careful thought is necessary to ascertain those conditions that are the most hazardous and which are prevalent in the community.

House Piping:

This class of work is generally done by outside contractors but in many lo-

calities the work is done by company employes. Where this is the case all details of installation should be thought of in preparing rules for too much care cannot be given to installing pipes that are enclosed in walls or otherwise concealed, where a chance leak would prove disastrous. These details should include the kind of fittings used. The use of cast iron fittings, unions or bushings should be prohibited as well as the repairing of split pipe with cement or lead, calked joints and the capping of all outlets until fixtures are installed.

Testing:

The proper testing of house piping is very important and the practice of slipshod methods in repairing defective piping should be avoided. Testing should be done before the installation of the meter and fixtures and while all piping can be readily examined. Soap suds should be applied to each joint whether the mercury guage shows a reduction of pressure or not. A second test should be made after the fixtures are installed to insure their being gas tight. After the meter is installed and gas turned on the workman should, as a further test, observe whether the one foot dial on the meter is registering with all openings closed.

Meters and Regulators:

The safe location of gas meters is a problem often met with and each location must be judged with respect to its own merits. The problem, however, can be regulated to a certain extent by having rules prohibiting the placing of meters in stairways, bedrooms, closets, or near a gas or electric lamp. Regulators should always be vented and the vent piped to the outside of the premises. The vent outlet should not be under porches or near windows or doors.

Automatic Water Heaters:

The pilot light of an automatic water heater is an element of danger unless precautions are taken to properly locate the heater so that draughts of air will not extinguish it.

These are only a few of the conditions met with in the Gas Industry that are more or less hazardous and which can be overcome by rules, if these rules are regarded as they should be by the employes. The proper observance of rules goes hand in hand with efficient safety organizations where the employes are given the advantage of a thorough practical knowledge of accident prevention, in which rules and their observance play a large part. It should be remembered that when a rule is made and published the work is only half done. Human nature is so constituted that it objects to innovation and as a rule is to some extent an introduction of a new or changed method, this characteristic must be overcome before real good can be accomplished. Employes' safety meetings as a part of a safety organization run on business principles, backed by an executive who believes that accident prevention work is beneficial to his employe, his customer and to his company, will accomplish the desired results.

Make Reservations Now for the Chicago Convention—Nov. 7-11

SEVERAL REASONS WHY THE LITTLE BOY AT THE END OF THE TABLE LOOKS THIN AND WAN

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Del Monte—the Convention Place

of the Pacific Coast Gas Association

September 20th to 23rd, inclusive, 1921

The Hotel Del Monte and its 18,000 acres of outdoors is one of the scenic playgrounds of California. It is located on a peninsula overlooking Monterey Bay, reached by a paved motor boulevard from both the south and the north. As a convention center it is ideal. Springtime reigns the year round and the open-air life is the order. The place is the sport center and playgrounds of California. It possesses two all green 18-hole golf courses,—six tennis courts,—open-air Roman plunge, as well as an enclosed pavilion and surf swimming,—trapshooting grounds,—miles of hunting preserves,—fishing facilities unsurpassed, with boats and launches available,—numerous picturesque motor boulevards,—bridle paths,—beautiful walks,—grounds and magnificent flowers that bloom the season round.

The Monterey peninsula is an interesting spot. Here is the cradle of California's history. Spain first proclaimed possession in 1602. Later missions, still standing, were founded. Then the first American flag in California was raised and the State's first Capitol established. Other historic events occurred too numerous to tell of here. Of all this some evidence still remains. The glorious past blends with the present and thus Del Monte is a storehouse of history, romance and pleasure.

The Convention Program

The Meetings Committee, Henry Bostwick, Chairman, has arranged, through the various active committees, for a presentation of papers and reports that will furnish a well-balanced program.

ACCOUNTING COMMITTEE A. P. Parratt, *Chairman*	Combination Gas and Electric Register	by H. W. Beekman
	Machine Bookkeeping	by F. C. Ingram
	Machine Accounting	by C. W. Platt
	Accounting Records and Valuation Practice	by R. E. Crossman
COMMERCIAL COMMITTEE Frank Weiss, *Chairman*	Industrial Gas	
	Galvanizing	by C. M. Roberts
	Candy Making	by J. Beveridge
	Heat Treating Steel	by John B. Redd
	Gas Arcs	by F. Talcott
	Gas Fired Boilers for Heating	by M. L. Page
	Warm Air House Heating	by J. B. Smith
	Sales and Compensation of Salesmen	by Geo. Egleston
	Advertising	by G. D. Mantle
TECHNICAL COMMITTEE E. L. Hall, *Chairman*	Thermal Efficiency of Oil-Gas Sets	by E. L. Hall
	Holder Capacity	by J. M. Dickey
	Protective Covering for Steel Pipe	by L. M. Klauber
	"Old Age" Gas Meters	by C. R. Miller

The Arrangement Committee has provided an excellent program of entertainment.

One of the main features is a golf tournament, with a magnificent silver cup for the winner.

A unique ceremony has been arranged for the night of the banquet, when the presentation of the pins will be made to the Past Presidents.

ACCOUNTING SECTION

W. H. PETTES, Chairman — EWALD HAASE, Vice-Chairman

H. W. HARTMAN, Secretary

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Fire Insurance Rates—E. C. SCOBELL, Rochester, N. Y.
Job Order Systems—F. M. JAMES, Aurora, Ill.
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Continuous Inventory of Fixed Capital—ERNEST JOHNSTON, Syracuse, N. Y.
Standard Classification of Accounts and Form of Annual Report to Public Service Commissions—W. J. MEYERS, New York, N. Y.
State Representatives—EWALD HAASE, Milwaukee, Wis.
Uniform Accounting Nomenclature—W. A. SAUER, Chicago, Ill.

Departmental Manuals

STANLEY P. FARWELL, Bureau of Commercial Economics, Chicago

The Manual Idea

Many progressive business and industrial concerns have come to realize within the last few years that it is highly advantageous from many standpoints to reduce their organization, policies, and procedures to writing in the form of a "manual." Manuals are in actual use in many lines of business and have stood the test of successful performance. Utility companies, however, have been slow to recognize the importance of manuals as an aid to successful administration, and it is with the idea of arousing interest in this subject that this paper is written.

Types of Manuals

To date the manual idea has been applied most extensively to offices and in the form of an "office manual." Dr. Lee Galloway defines the office manual as follows:

> "A text book outlining administrative tasks,, designed to prevent errors, and to establish a permanent record of the best methods of performing the office work."

As is to be expected, there is some difference of opinion as to what should be included in a manual. It is quite common for the broad policies of the company to be written up in the shape of a "policy book" distinct from the main body of the manual. Rules and regulations for employes may constitute another separate section in the from of a "rule book."

A most important section of a manual is the "Manual of Procedure," "Standard Practice Instructions," or "Routine" as it is variously termed. In this

section the procedure or routine is set forth in considerable detail so as to serve as a guide book for all of the operations carried on.

In our work for public utilities it has been our practice to take the department as a unit in the preparation of manuals and to compile for each a "departmental manual," dealing with the general functions and policies of the department, the organization, the duties and responsibilities of the positions in it, the methods of procedure employed, the records and reports in use, the forms used, and the rules and regulations for employes. For companies of any size, it is advisable to supplement the departmental manual by an employes' hand book, giving information which all employees should know as to the history of the company, its general organization, the scope of its activities, the treatment of customers, the approved telephone practice, the general office hours, etc. The form, preparation, issuance, and maintenance of departmental manuals will be discussed later in this paper.

The application of departmental manuals is not confined to clerical and accounting departments. Such manuals are also of great help in shops, stations, and in field work.

The Use and Advantages of Manuals

Some of the uses of manuals and the advantages secured through their preparation and use are stated below.

Improvement through Preparation: Experience has shown that the investigation necessary in connection with the preparation of manuals commonly produces valuable results in the way of efficiency and economy. The work of "putting it in writing" forces a decision in the case of every moot point in organization or system. The comprehensive view of the structure and methods of the concern or department brings to light unsettled conditions, loose ends, or neglected features. Lines of authority may not be clear.. Responsibilities may not be definitely fixed. Unnecessary forms, records, and reports may be in use. In each case the necessity of putting the conclusions in writing insures careful consideration.

Use to Prevent Loss of Information: With a manual in use, the loss of information as to fundamental policies and detail methods of procedure through an employee's leaving is minimized. Too often essential information in some person's head has been lost to a company when he leaves.

Use as an Aid in Training: It is highly desirable that a new employe get in the shortest possible time full and correct information as to his immediate duties, his responsibilities, his place in the organization, and the rules and regulations he must observe. A manual is a great aid in accomplishing this result and in meeting such situations in the long run saves many times the expense of its preparation.

Put into the hands of a new employe, a manual gives him an opportunity to become generally familiar with the work of his department or his office, and of his own position, and to proceed intelligently to the acquisition of the detailed knowledge that is necessary to make him useful.

Put into the hands of supervisory heads of offices and departments concerned in

work covered by the manual, it enables them to understand the company business as a whole, and so to conduct their own offices as best to fit in with the general scheme of things. This point could be easily elaborated as experience in large corporations has shown that there is likely to be a striking lack of understanding on the part of employes as to the work of departments other than those in which they are engaged, and a lack of knowledge on the part of higher officials as to what is going on in the various branches under their own jurisdiction.

Gain through Written Instructions—The written form of the manual is advantageous in that it minimizes verbal instructions. Oral instructions are more easily forgotten, disregarded, or misunderstood, than orders in writing. Moreover, in oral instructions there is great liability of forgetting to explain some important detail.

Use as Record of Approved Procedure: Manuals are needed to codify approved practice, organization relations, instructions, etc. An attempt is usually made to meet this requirement by writing a special letter, a circular, or bulletin of instructions to cover each case as it comes up, until, after a number of years, the files contain a veritable mountain of "approved procedure."

The lack of such a code as is set up in a manual is a serious handicap in management. Employes may be repeatedly instructed to "follow the rules," but certain instructions are bound to remain ineffective unless employes either know the rules or where to find them. It not only is impossible to make use of files of letters, circulars, or bulletins as codes of instructions because of their physical condition and volume, but they are unsafe for reference because they are contradictory and partially obsolete. Furthermore, they often give more space to special cases than they do to important points that are met many times a day and are supposed to be generally understood, but which often are not.

A manual fills an important need as a work of reference for the uninformed and a memory aid for the few who are expected to know the official practice. A very common custom of dispensing with records of approved procedures and relying on a few of the long-service employes to expound the customs and the traditions of the department is to be deplored.

Use as an Aid to Supervision: Manuals serve another useful purpose. They make it possible for supervisory officers to ascertain by the reading of a few pages just how things are done in a given part of the organization and just what the duties of each individual are. As only live regulations are allowed to remain in circulation, they feel safe in assuming that the recorded procedure is that actually followed and can be guided accordingly. In cases of trouble, confusion, or delay, it is hard for supervisory officers to fix the responsibility. Likewise, employes themselves, not understanding clearly where the responsibility lies, are apt not to take the same interest and precaution that they otherwise would. This places a premium on carelessness and is decidedly undesirable.

Use as a Basis for Development: A description of existing organization and system as given by a manual furnishes a starting point for improvement work.

With this material at hand the time and effort necessary to ascertain the nature of the organization or the manner in which the work is performed is greatly reduced.

Furthermore, regulations covering new organization or new methods developed after investigation, are very useful as working instruments. They will, in fact, provide a program for such work and make it possible to ascertain progress at any time.

Use to Secure Definiteness in Recommendation: The adoption of the practice of putting procedure into writing naturally results in the setting-up of recommendations for improvements in the same shape. This not only is of assistance at the time the recommendations are considered, but is bound to make them detailed and specific on each point.

Use to Make Improvement Work Systematic and Permanent: The preparation and use of a manual offers the most practical method of standardizing those organization features and methods of procedure that have been developed through exhaustive study and deliberation, and have received official approval, and of enforcing similar amount of care in case of proposed changes.

Changes in organization and system and the manual sections affected should be changed simultaneously. This provision automatically makes it imperative that changes be definitely specified, that they be announced to all concerned, that the changes be given proper official approval, and that both the new and the old procedure at the date of the change be made matters of record.

Classification of Sections in Manual

A manual is made up of a number of sections, each dealing with a specific subject so far as practicable.. In view of the fact that a manual is subject to frequent change on account of changes in organization and system, it is apparent that the necessary revisions are facilitated by having any one section deal only with closely related matters.

A decimal classification of the sections insures an orderly arrangement in the manual and makes reference easy. A suitable alphabetic classification serves much the same purpose.. A typical classification is shown below. Even hundreds are assigned to the principal divisions and tenths and units to the sections falling within these divisions. The division numbers run from 100 to 900 inclusive.

Division number	Contents
100	Purpose and Use of the Manual
200	Functions and Policies
300	Organization
400	Duties and Responsibilities of Employes
500	Routine
600	Forms
700	Records and Reports
800	
900	Rules and Regulations

An idea of the detailed classification of the divisions may be gained from the following section of a typical classification:

500 ROUTINE

- 5.10 Collection Procedure
- 5.11 Preparing and Handling Collection Sheets
- 5.12 Preparing and Handling Final Bills

5.13 Preparing and Handling Merchandise Bills and Locate Orders
5.14 Collectors' Procedure on Current Bills
5.15 Collectors' Procedure on Final Bills
5.16 Collectors' Procedure on Final Bill Deposits
5.17 Collectors' Procedure on Merchandise Bills
5.18 Cutting off Gas for Nonpayments
5.19 Turning off Gas after Cut-Off
5.20 Procedure in Handling Money Collected
5.21 Collectors' Receipting for Collections
5.22 Collectors' Reporting of Collections
5.23 Auditing Collections
5.24 Stamping Collection Books

Considering again the general classification, division 100 sets forth the purpose and use of the manual and prescribes the methods for maintaining it.

Division 200 treats of the functions and policies of the department, and of its place in the company organization.

Division 300 deals with the approved organization of the department. It specifies the functions of the several divisions and sections of the department and their place in the organization.

In the sections of division 400 ,the duties and responsibilities attached to the positions in the department are specified, and the place of each position is fixed with relation to those above and below it. These sections do not prescribe how the duties are to be performed; this information is given by the routine in division 500. These duties statements should show among other things, what records and reports each employe is responsible for. They should also include, besides the specific duties enumerated, a statement to the effect that the employe is to perform other duties as assigned, in order that the employe may not get the idea that he is not supposed to do anything outside of the work specified.

Division 500 consists of sections giving the essential features of the approved methods of procedure, or routine. For convenience, sections of this nature are termed "routines." These routines should clearly and logically set forth the principal operations necessary to the fulfillment of the functions of the department, give the correct sequence of steps and the correct routing of forms, specify the reports that should be made and records that should be kept, and fix the responsibility for each move, each report and each record. All employes concerned in the routine should be designated by the titles of their positons.

Division 600 consists simply of a file of forms. A folder should be assigned to each class of form used by the department and in it filed samples of these forms and any suggestions regarding them. As revisions are made, samples of the revised forms should be filed. With such a file in existence, reference can easily be made to forms referred to in other parts of the manual.

The sections of division 700 deal with the records kept by the department and the reports rendered.

Division 800 is open for any use that may not be taken care of by the other divisions.

Division 900 consists of rules and regulations dealing with matters of disci-

pline, hours, conduct of work, etc.

A table of contents and an alphabetical index should be provided in case the size of the manual warrants.

Style of Manual

A manual should be as well written as possible. It is not expected to be an example of literary style but, at least, it should be clear, comprehensive, definite, and accurate. The requirements in these various respects are dealt with below:

Clearness: Descriptions should be as clear as possible. In the case of a routine the various steps should be set down in logical order from start to finish, Care should be taken in the use of language so there will be no question as to the meaning intended.

Comprehensiveness: No necessary statement should be omitted from a section of the manual. In the case of a routine, care should be exercised not to omit any essential steps or any necessary information as to forms, records, etc., that will add to the usefulness of the descriptions. It cannot be expected that any one will read between the lines of a write-up and discover some essential element of the routine. It is better to give too much information than not enough.

Definiteness: Definiteness is essential. Organization relationships must be laid down definitely. In describing routine, the elements of responsibility, time, identification of forms and other papers, and location must be taken account of.

Accuracy: Accuracy is a prime essential in manual writing. Great care must be taken to make sure that statements are based on facts. It is strange how difficult it sometimes is to get the facts as to the details of a routine, the duties of a position, or to organization relationships.

Set-up of Manual: The set-up used in the manual is important, as it affects legibility, ease of reference, and ease of revision. Ease of reference is promoted by the judicious use of headings. Too liberal use of headings should be avoided, also excessive underscoring of words in the text and in headings. Ease of revision and also usefulness for instruction purposes are promoted by limiting, so far as practicable, the number of topics treated per page.

Figure 1 shows a suitable set-up for routines. The name of the manual and the general classification of the routine are placed in the upper left-hand corner. The section number is shown in the upper right-hand corner. The nature of the routine is shown by a heading in the center of the sheet. The body of the routine is set up in a measure five inches wide if pica type is used, with suitable headings in a wide margin at the left. The headings are in capital letters. The date the routine is issued is put in the lower right-hand corner. In case the routine is later revised, the date of revision is substituted for the date of original issuance. On the second and succeeding pages of a routine, the page number is placed under the section number.

Preparation of the Manual

There is necessity for a regular, carefully planned procedure in the preparation, approval, issuing, and maintenance of a departmental manual.

It should be recognized at the outset that the preparation of a manual for a

department of any size is no small task and that the success of the undertaking depends upon careful planning and execution. In the following paragraphs a plan is outlined which experience has shown to be well adopted to the preparation of the manual.

Preparation of Gradual Process: No attempt should be made to prepare or put a manual into effect all at once. Section after section—the most important first—should be prepared and issued, and the manual thus built up gradually without too great a burden on anyone.

Responsibility for Preparation: The work of preparing and maintaining a departmental manual should be put in charge of some qualified department executive. He should be given authority to call in other members of the department for assistance as is necessary.

Census of Duties and Operations: The first step in the process is the taking of a "census" of the duties and responsibilities of the members of the department and of the operations they perform. This census can well be taken by means of "duty sheets" on which each employe is required to give the following information:

Name (in full)
Title of position
Department and Division
Name and title of immediate superior

Statement in detail of duties and responsibilities including records kept and reports made, with a reference to names and numbers of forms, and with an estimate of the time devoted to the more important duties.

The more details that can be obtained on the duty sheets the better. Information should be given as to whether the various operations are performed daily, monthly, quarterly, or annually. Preferably, the employe should also outline the routine he follows in performing his duties.

The next step is to determine exactly what the organization of the department is, and what operations—perhaps carried on by different persons—can logically be combined for description in a routine to form a section of the manual. In determining what a routine should include, consideration should be given to its length—it should not be too long—and to its use for instruction purposes. It is evident that the shorter a routine is, the less work is necessitated by a change. And the more a routine corresponds to a single employe's work, the more valuable it is for instruction purposes, for then a new employe can be handed a routine dealing entirely and mostly with his work.

From this analysis of duties and operations, an outline of the manual is prepared which is the basis for the next step.

Preparing Sections of Manual: Having settled on the outline the employe in charge of the preparation of the manual assigns to qualified members of the department the preparation of specific sections covering organization or routine with which they are most familiar. Instructions should be prepared and issued to the persons selected, informing them regarding the points to be kept in mind to secure the best results as regards clearness, comprehensiveness, definiteness, and accuracy.

Editing, Approving and Issuing: When sections of the manual are com-

pleted by those delegated to do the work, they should be handed to the person in charge of the compilation. He should read them carefully, do any editing necessary, and then submit them to the head of the department. When the latter's approval has been secured, the compiler will have the sections issued in the standard form, bearing the date of issuance in the lower right-hand corner of each sheet. Enough copies should be made of each section to supply each copy of the manual and leave a number for instruction purposes.

Various processes may be used according to circumstances in producing copies of the manual. If only a few copies are needed, they may well be typewritten or be duplicated by means of hectograph ink. If more copies are desired, the mimeograph process is satisfactory. Sheets can also be multigraphed or printed, if desired.

Distributing and Filing of Manual

A complete copy of the manual should be furnished each of the principal executives of the department and to higher officials of the company, as desirable. Supervisory employes in the lower ranks may well be furnished such sections of the manual as pertain to the work for which they are responsible. Provision should be made so that employes may readily refer to complete copies of the manual. Extra copies of all sections should be kept on hand for the instruction of new employes.

Manuals should be filed for use in approved binders of the loose-leaf type, fitted with suitable guides and indices.

A vertical file should be established for filing up-to-date and obsolete copies of regulations and any suggestions concerning revisions, etc. Half-cut folders may well be used, those with tabs in the left-hand position being employed for superseded issues and for suggestions, and those with tabs in the right-hand position for extra, up-to-date copies.

The actual issuance and insertion in the various binders should be executed by one individual only, acting under direct authority of the head of the department. This practice is necessary in order to insure that copies will be kept up-to-date. This process will be facilitated if each manual is kept in some particular place where it will always be handy for reference and for revision.

Maintenance of Manual

A manual must be kept strictly up-to-date otherwise it soon becomes valueless. Many attempts to use manuals have failed because little or no provision was made for maintaining them. To keep a manual up to date, the following procedure should be observed.

No change should be made in organization, policy, or system, without the approval of the superintendent of the department. All suggestions for changes must be made in writing and addressed to the superintendent. If a change is approved, a departmental bulletin should be issued giving the particulars. Upon the issuance of such a bulletin, the person having charge of maintaining the manual should make any required changes in the manual, submit the revised sheets to the superintendent, and upon his approval issue and distribute the revised sections, recall the superseded sheets, and file one copy of the latter in the manual file already described.

Chicago is Preparing for a Record Crowd, Nov. 7-11

ADVERTISING SECTION

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Everybody Won This Gas Fight

WILLIS B. POWELL, Secretary, Lake County Chamber of Commerce, Tavares, Fla.

(*Reprinted from the August issue of The Nation's Business*)

SOME years ago in a new and progressive city the gas rate was $1.65 per 1,000 cubic feet. Other cities, in distant states, were charging $1.00 to $1.25. Naturally the citizens protested and the protest was carried to the Chamber of Commerce, where it was expected the usual resolutions would be passed, the gas company put on the grill, and threats made for municipal ownership and other dire things. To expedite the story we shall call the city in question "Tyrus." The gas company was a foreign concern. Foreign capital invested in small city corporations is prey for the public. The capitalists and what they capitalize is about as popular as tonsilitis at a singing bee.

The company admitted that a $1.00 gas rate prevailed in some cities and the plants paid dividends with $1 gas, while in Tyrus no dividends had been declared at a $1.65 rate. They proved that in some dollar rate cities there were more connections in one city block of apartment houses than in four square miles of outlying Tyrus territory. They proved that some mains in Tyrus were laid at an expense that would not in the next five years, justify the calking thereof.

This was all brought out in a conference the secretary had with the foreign president and the local manager. They approached the conference in a friendly spirit, not, as one would suppose, in that "public-be-damned" frame of mind.

"If we had two thousand additional connections to the existing mains," said the president, "we would lower the price of gas to one-fifty and with four thousand connections to one thirty-five."

"And why don't you attempt to increase your business by extending your territory?" asked the secretary.

"For the simple reason the new business would not pay for the blue prints.

Your city is smeared over too much territory and it will take two generations to fill in the waste places."

This was a fact the seceretary could not controvert, for Tyrus was laid out to accommodate comfortably a million people, and it had only fifty thousand souls.

"What effort are you making to get this new business?" asked the secretary.

"We have eleven house-to-house canvassers trying to interest the housewife in gas ranges; we are burning up columns upon columns of space in the newspapers—in fact, we are spending four times more money for advertising here than in any other city where we operate gas plants."

"You are not advertising," the secretary stated, "you are just using space."

The president of the gas company is a stockholder in two large publishing houses and newspapers and he bristled up at this and shot back:

"Probably you know more about advertising than we do. If so, I will give you a commission to take over our advertising."

"I can't accept your commission," replied the secretary, "but I accept your challenge. Let's get down to cases. Sign a paper to the effect that if two thousand new customers are secured with connections to existing gas mains, and those under construction to be finished within a period of six months, your company will reduce the price to the consumers of Tyrus to one dollar and fifty cents. Also that I am to direct the advertising and have charge of the canvassing crew for a period of one month. I agree to expend no more money for advertising or salaries than the expense incurred at present for publicity and canvassing."

"Agreed," snapped the gas man.

The papers were duly drawn up, signed, witnessed and became a contract—a friendly challenge put to a test.

The secretary lost no time preparing for his campaign to commence within two weeks' time. He went over the files of the local newspapers and analyzed the advertising. Its weakness, as it appeared to him, was that it simply demanded people to "Cook With Gas." Seldom was this demand changed, and then by use of electrotypes furnished by gas appliance concerns—ads more or less wooden.

The billboards about the city and environs were emblazoned with the demand that you should "Cook With Gas." It appeared to the secretary that a jeweler might as well advertise "Eat With a Fork," or a trolley company "Ride on a Trolley." The ineffectiveness of the advertising rather stimulated the secretary. The president of the company was correct when he stated that they were "burning money for advertising as fast as people were burning gas for cooking."

The secretary called the canvassers together. He told them that he was to be their boss for the next six weeks—two weeks preparatory campaign and a month of work under his guidance. He set forth that cash prizes would be awarded to the salesmen making the best record during that month. Certain points would be credited for selling ranges, one point for each dollar's worth sold; certain points for selling gas heaters, gas appliances, gas lights and even gas fans. There would be a plus credit for new users of gas; and for exchange of cheap range for higher priced one the dif-

ference in price would be credited. The points would represent a dollar and they would be paid a bonus of 3 per cent on sales. The canvasser making the highest score would be awarded $100 additional; the next $25 and the next $15 and the next $10. Any canvasser who could attain a certain number of points would be dismissed from the crew and given a position elsewhere with the company.

This spurred the canvassers of eleven young men to a point that they wanted to get right out and go to work. They were taught to talk gas intelligently; to advise about heat units and the waste of heat in wood or coal ranges; to satisfy the timid of its safety; the manner of approach and the hours not to canvass the housewife except by appointment; the wisdom of calls by appointment when the matter could be gone over with husband and friend wife.

But the secretary was more concerned in the advertising program. He was closeted with the local manager and the auditor of the company for many an hour. The gas company, he learned, was more of an institution than he thought. Inside of a few days he said to himself. "If the rest of the citizens of Tyrus felt as I feel, the gas company, instead of lowering the price of its product, ought to charge $2 for it." He also admitted that the president of the gas company was correct. It was costing $1.23 to bring 1,000 feet of gas to range, and there was depreciation, interest, insurance, taxes and a multiplicity of other charges to eat up the difference between $1.65 and $1.23, saying nothing of the thousands of dollars for extensions, the thousands of dollars for contingencies and liability insurance. All this gave the secretary thought for a line of attack on the public's conscience.

The secretary contracted five inches three columns wide in the local newspapers, cutting down the advertising expense by more than half. He needed this money and the money he expected to save in the dismissal of some of the canvassers, to pay bonuses, and prize awards, and for demonstration work and the like.

to gas companies all over the United

I have before me copies of the advertisements he wrote—not all of them—but 52 which he had printed and sold States, Canada and other foreign countries.

The initial advertisement of the series said:

$246,525 Worth of Optimism

back of the Tyrus Gas Co. is a powerful optimism—belief in things—belief that things are good; belief that the people appreciate our efforts; belief in ourselves; belief in our business and belief in Tyrus.

It was explained that the gas company was to take the public into its confidence, and under the second head this in full:

Our gas plant is flexible. It has a tremendous capacity; the mains are ample for double the service now imposed on them—if the plant and the mains do double the business now done the price of gas will be decreased. We want to declare a dividend to the consumer.

It also advised the public that the series of advertisements to follow would be interesting and could be found in that special position in the paper each day.

The second advertisement said, "To the layman a gas main is a pipe covered with dirt." It went on to prove that

$90,823.48 was spent in extensions of gas mains during the ten months past—that $246,525 had been expended on all the mains laid.

At that time Tyrus was erecting its first ten-story office building and ground broken for the second structure of a like kind. All interest was centered on these evidences of growth and importance. So, the third advertisement stated that the gas company was putting more money under ground than the building contractors were putting above ground.

The third day, half of Tyrus was discussing the gas company's advertisements. Many a man who never poked his head in the gas company's office, who mailed his check each month rather than to pay the cashier in person, stopped to tell the local manager that he was putting over a fine line of advertising.

The fourth advertisement stated that there were 187 miles of streets in Tyrus within the city limits and more than 100 additional miles in the close-in sections, and that already 87 miles of mains had been laid. It told of one extension that cost so much that the monthly revenue would not pay the interest on the investment.

The next advertisement told of the money invested in the plant, and recited some of the improvements contemplated.

The sixth advertisement recounted the expense attendant upon operating the plant, the wage and office expense, the amount of money that went to the coffers of the merchants and wholesalers of Tyrus, figures most imposing.

The seventh gave the cost of the gas to the range; it cited a few contingencies such as $21,000 for bursting of a gas main and killing a man and injuring others.

The eighth advertisement was a resumé of all the ads that preceeded it, and took up improvements to the plant, extensions being made, and that the company had never declared a dividend. There was not a whine in any of the advertisements.

Then came the challenge to the people: Use more gas and get in on the dividend. Guarantee to reduce the price of gas 15 cents a 1,000 cubic feet when 2,000 additional connections were secured—whether they be range, water heater or factory connection.

This frankness was new to the people; it was the subject for discussion in public places and in the homes and clubs.

Within a week every man, woman and child was a friend of the Tyrus Gas Co. During the first week's campaign a school of instruction was started where expert cooks taught the town cooks—most of them negresses—the use of the range for cooking, for washing and ironing. In the uptown office and salesroom noted cooks served hot biscuits and coffee and pancakes and syrup, and other delicacies, and many a man took his noon-day lunch there and left an order for a range, while the women shopping took tea and inspected the stock and left many an order for range or water heater.

The second week the campaign took up and exploited a cheap range, connected free on first floor, plus pipe on second floor—$14—$1 down and $1 a week—for thirteen weeks, or $13 cash with installation.

And the canvassers went abroad, instructed to work the city by blocks and endeavor to place only one range to the

block—and that range was to advertise itself to the neighboring housewives.

The cheap range was ordered by the carloads—hundreds upon hundreds of them were installed. The canvassers had their goods 99 per cent sold before they entered a home.

Within a month the secretary had won out for $1.50 gas. More than 2,000 gas ranges were sold and installed and meters ticked off interminable feet of gas consumed; innumerable hot water heaters graced bath rooms; hundreds of gas appliances were sold.

Furthermore, within another six months the company voluntarily reduced the gas to $1.35, because the head of the canvassing crew had applied himself and was able to continue the advertising and canvassing plan.

Our Motion-Picture Film

REQUESTS for use of the A. G. A. motion-picture film entitled "The Spirit of Service" are coming into headquarters so rapidly that the seven prints available for distribution are kept constantly in circulation and it often difficult to arrange the shipping schedule so that they reach their destinations on time.

By way of facilitating delivery, our company members can do us a very real service if they will specify certain dates on which the film is to be used when they request its loan. Due to the popularity of the film it is well to arrange for its showing from two to three weeks in advance, in order that ample time may be had for shipping it.

We are obliged to limit the use of each print to a period of two weeks, but in situations where the film can not be used continuously for that length of time we particularly request that it be returned to us with the understanding that we will reship it for use later on. In order to take care of requests, the seven prints can not remain idle more than one day.

Companies who have used the film to date seem to have had no difficulty in arranging for its projection at local theaters. We are prepared to sell prints of the film for $110.00 each.

More Chats.

A Second set of Chat advertisements was issued to all company members recently, accompanied by proof of the 17th good-will advertisement which is reproduced in this section.

As stated in June, when the first set of Chats was issued to our membership, it is the intention of the Association to prepare a new set of advertisements every three months so that companies using them may insert one advertisement each week in their local papers. This plan has worked out well to date and the Chats are universally liked.

Not only are companies using them as newspaper copy but clippings forwarded to this office show that the Chats are appearing on the back of monthly statements, in theater programs, in booklets, in house organs and in various other mediums which show how readily this kind of advertising may be adapted to different uses.

We have back copies of all advertisements on hand which may be had for the asking.

CHATS WITH YOUR GAS MAN

While other merchants may not care what you do with an article after you buy it—whether or you put it to a wasteful use or not—we are greatly interested. We want you to get the most for your money out of the gas you use. We want you to make your gas bills thrift bills.

The reason we desire this is because we know from business experience that waste of gas means big bills, complaints, investigations, re-checking, letter writing, delayed payments and other expenses, which, when taken together, mean dissatisfied customers.

Satisfied customers are worth more to us than any revenue derived from wasted gas. We want no money we do not earn.

We live up to this policy every day and are glad to aid you in choosing the most economical gas appliances and tell you how to avoid waste by using them intelligently.

SHEBOYGAN GAS LIGHT COMPANY

Have Gas Service in the Home

Chats With Your Gas Man

When a gas bill is abnormally heavy there always is complete explanation for it, when all the facts and circumstances connected with the case are known.

For instance, when you find a sudden or unusual increase in your bill, ask yourself:

Has the weather been to blame?

Has there been sickness in the house?

Have I had company during the period?

Have the servants or others used more gas than I am aware of?

Have any additional gas appliances been installed during the period?

Are there any other circumstances or occurrences that will account for the increase in my bill?

If you recall no reason to us first (do not go to your neighbors) and we will do our utmost to help you locate the cause. If we find that a mistake has been made we will cheerfully correct the error. We are here to serve you.

GAS CO.

126 S. Main. Phone 621.

CHATS WITH THE CONSOLIDATED

As the title suggests, we want these "chats" to be in the nature of friendly talks between us. Our purpose in this is to tell you certain facts about our business that will, we believe, clear away many misunderstandings.

We confess that prejudice against the business has been fostered by letting gross errors go uncorrected, but all of this is going to be changed so far as we are able to change it.

We shall try in these "chats" to answer every question about the utility business that has puzzled you. If we seem to be overlooking any, kindly write us about it and it will be answered.

Read these "chats" as they appear in this space weekly. You will not only find them interesting and informative, but we believe they will cause you to see the public utility business in a new light.

CHARLESTON CONSOLIDATED RAILWAY & LIGHTING COMPANY

CHATS WITH YOUR GAS MAN

The other day a friend said to us: "Why should you advertise? You get all the gas business there is."

We are glad he asked this question. Perhaps you, too, would like to know why. Here is our answer:

It is not sufficient that we merely give good service, be courteous and make friends. We want to dispel prejudice and misunderstanding from the minds of the public by continually stating the facts about our business.

We believe it our duty to let the public know the real nature of our business and the aims and ideals of the men engaged in that business. There is no mystery about it, nothing that we would wish to cover up. Then why not advertise it?

Like the man on the witness stand we can say: "It's the easiest thing in the world to tell the truth when there is nothing but the truth to tell."

Northern Indiana Gas and Electric Company

CHATS WITH YOUR GAS MAN

While other merchants may not care what you do with an article after you buy it—whether you put in to a wasteful use or not—we are greatly interested. We want you to get the most for your money out of the gas you use. We want you to make your gas bills thrift bills.

The reason we desire this is because we know from business experience that waste of gas means big bills, complaints, investigations, re-checking, letter writing, delayed payments and other expenses, which, when taken together, mean dissatisfied customers.

Satisfied customers are worth more to us than any revenue derived from wasted gas. We want no money we do not earn.

We live up to this policy every day and are glad to aid you in choosing the most economical appliances and tell you how to avoid waste by using them intelligently.

Cohoes Power and Light Corporation

See page 5 for "Consolidated Chats."—Adv.

THE PEOPLE'S GAS GAZETTE

Published by
The Peoples Gas Light & Coke Co.
Michigan Ave. at Adams St.
Tel. Wabash 6000

JULY 1921.

CHATS WITH YOUR GAS MAN

If gas were sold at the corner grocery like other things, would it be cheaper? Yes, indeed. By paying cash on delivery and carrying your gas with you, you could get big bag full for a penny. And for a dollar — well, we leave it to your imagination.

But that isn't the most interesting thing. The fun would commence when you tried to use the gas. "Now that I have it," you would say, "what am I going to do with it?" And immediately you would discover that you had bought the wrong thing; that it was gas service you wanted and not a bag full of gas.

There is a big difference.

Gas without service is of little use to anyone. But gas with service is a necessity. One is mere vapor; the other, fuel—clean, efficient, reliable—ready when you want it, where you want it.

You speak of street car service, telephone service, train service, mail service. Why not gas service? That's what you buy, use and pay for.

CHATS WITH YOUR GAS MAN.

Our Chats "WITH YOUR GAS-MAN" advertisements are producing results. A consumer writes us that he is *"puzzled to know why, when you can reach every customer with a printed notice either on, or with, the gas bill, you find it necessary to advertise in the Cambridge papers this offer to answer questions, unless the big idea is to bribe the newspapers to silence or favorable comment when your rates are attacked,"* and asks *"Is this one of the expenses necessary to keep up the rates?"*

Our answer is that to print these advertisements on the gas bills would be out of the question for want of room, and if sent with the gas bills they might receive less attention than if printed in the papers.

People will often times read and take notice of advertisements in newspapers, but will throw into the waste paper basket advertising matter received with a bill, and there is also the chance that we may reach, through the press, some people who are not yet our customers.

The public press has long been regarded as a clearing house for ideas and opinions; and questions asked and answered through this medium enlighten, by the exchange of thought, thousands of people interested in the subject, who might not take the trouble to notice a request sent to them personally. That the papers can, by such means, be *"bribed to silence or favorable comment when rates are attacked,"* has not been our experience heretofore, and of course, the attitude of the papers would not influence the Department of Public Utilities in fixing rates.

We feel that whatever tends to promote good-will in the public mind and to secure fair treatment of Public Utilities will in the long run tend to increase business and in that way help to reduce rates.

The total amount spent by us for newspaper advertising is negligible as an element in the cost of gas. The average cost of all advertising for the past five years, including the newspapers, is **less than one-fifth of one cent per thousand feet of gas sold.**

Cambridge Gas Light Company.

Have You Told the Public These Things?

Pertinent Excerpts From an Address by Martin J. Insull Before the Southwestern Electrical and Gas Association

I WAS very much amused some time some years ago we learned that we Telephone and Telegraph Company told in a speech of an incident that happened in his own business. He went to see the manager of one of the American Telephone and Telegraph sub-companies somewhere in the country, and that particular morning the manager was in a very bad humor—he got out of bed on the wrong side, as we would say—Mr. Hall asked him about the trouble and the whole complaint was the size of his electric light bill. Mr. Hall remarked to him "'this is a fine thing, for one utility man to be complaining of the size of the bill of some other utility. You have undoubtedly had the service, and you ought to pay the bill and do it without comment."

Now, that just illustrates to you what the point of view of the ordinary public must be when they get a light bill or gas bill, or a bill for water or a bill for heat or the telephone service, they have nothing to show what that bill was for. We are not selling them a commodity you see; they haven't anything tangible to put their hands on, and when they have to pay that bill they feel as though they are paying for a dead horse. Now, what is it that you have sold them, and for which they are to pay? It is not a commodity, it is a great service. It is impossible for them to see the millions and millions, aye billions of dollars, that their thrifty fellow citizens have gathered together and invested in these great utility properties. They never think of that. I will ask you: "Have you ever told them of it?" Have you, in your communities, ever gone to your commercial club and explained to them that when they push the button and get the light what is back of that button? Have you ever told them that in the electric light and power business in this United States there is four and one-half billions of dollars invested? Have you ever told them when they push that button that they have the use of the investment of several millions of dollars that is subject to their call; that it is operating twenty-four hours a day for their convenience? If you haven't told them, how do you expect them to find it out? Who is to blame if they don't know it? You utility operators. The way for you to tell them is to go out in your communities, to your Rotary Clubs and Commercial Clubs and tell it. That will make one good story and there are many more that you could well tell them.....

Now consider this business as compared with a commodity business. Take it all over the whole country, the utility business as a whole for every dollar of income received has invested in it somewhere in the neighborhood of five dollars. With increased rates it may be a little less, but it is somewhere between four and five dollars. So we are in a business that turns its capital only once every four or five years; but we are expecting from a public that is used to being in a business that turns its capital two, three, four, five or six times a year, the same kind of reaction towards our

business as we have without them knowing the real conditions. Their business is absolutely different; a man goes into a business that turns its capital four times a year and he puts ten thousand dollars in it, he has a "turnover" of forty thousand dollars. If he is a good merchant he expects to make ten per cent; then on a business of forty thousand dollars he has made four thousand dollars and paid all expenses. Now, allowing him a reasonable rate of return on his capital of ten thousand dollars, I will say ten per cent, he would receive interest of a thousand dollars and three thousand dollars profit. That is his business, now what is yours? You are allowed to charge such reasonable rates as will provide operating expenses, depreciation and a reasonable return on the money invested in the property used for the public interest. There is no such thing as that three thousand dollars profit in your business; all you get is a reasonable rate of return on the money invested in your business. Have you ever gone out and told the public that? If you haven't, just to oblige me, when you go home tell it to them. Tell them this utility business has got down to the point where there is no profit in it; all there is is a reasonable return on the money invested.

Now in a business of that kind how can you build up out of earnings an amount which will provide for the necessary future extensions of the business? My merchant had something to do that with, but where have you got anything with which to do it? Nowhere. The Commission may allow you some reserve accounts to take care of contingencies, which you are entitled to, but you have no profits to put aside month by month, year by year, to provide new capital for extensions. You haven't told the public that! It means no more profit to us, it probably means trouble to make the extensions to provide the service they demand, because all we can earn on the increased investments is "a reasonable return." Now, why don't you tell that to the public? Why do you let the politician go about and say you are "bleeding the public," and stand idly by and not say: "Come down to the office and I will show you our books. I will show you what we are doing. I'll show you what this politician says is not true." We started years ago at the wrong end; we started at the political end and we should have started at the public end. Let's get reversed and reversed as quickly as we know how, because if you can satisfy the public and secure their favorable opinion you need not worry about the political end, that will take care of itself!

We all have a lot at stake in the State of Texas, and it is our duty to protect it, and the way to do that is to make the public our friends, and the way to make them our friends is to tell them the truth and let them know what our business really is.

I am not going into the question of regulation, but I am going to gather together the things I have been trying to tell you, and tell you why I think the utility business is the public's business. Largely it doesn't matter whether it is by state regulation or municipal regulation or by general feeling, you can only charge the rates that the public will allow you to charge. Now, just face it, that is about the situation. If it is under regulation, state or municipal, it is the

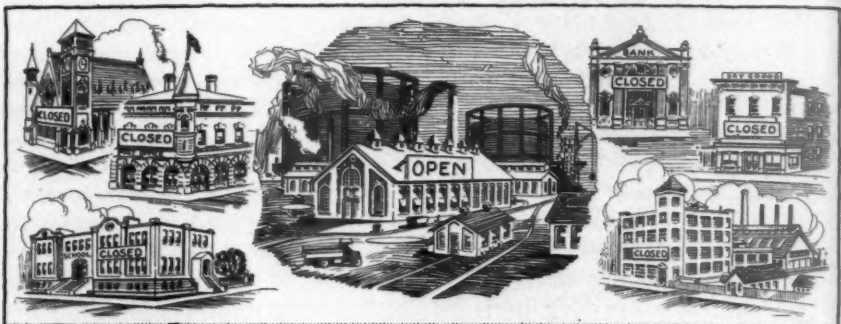
representatives of the public that say what the rates shall be. If it is where there is no regulation it may be largely a kind of horse trade, but you are not in a position to charge any rate you desire. In the end the rates you charge are only the rates the public will allow. For the same reason the class of service is largely the class of service that the public demands. So, the success or failure of our business is largely in the hands of the public. They are really more interested in the success of our business than we are ourselves. We can only get a reasonable return on the money that we continue to invest; their whole future business and social life depends on the proper development of these utilities in the United States. So, isn't this utility business far more the business of the public than it is of the operators?

Now, gentlemen, I want you to go home and go into your own communities and tell this same story. You are in a better position than I am to tell it. I came many miles to tell it to you. I go any time I am asked to tell it to Commercial Clubs and other organizations in any of the states in which I am interested or in which we operate, and we operate in some fifteen of them. Now if I can do that, you gentlemen have as much time as I have. Go home and start in by educating your own people, or rather start in by educating yourselves. Give some thought to this matter; think about it along the lines of the inter-relation between the utility investors and the public; then educate your own employees, because they are the people that have close contact with the public. Try to arrange to speak before your commercial bodies, your Rotary Club, your Kiwanis Club, and your Lions' Club. Tell your story there, tell it wherever you have an opportunity. If all the operators in this country would do that we would soon change public opinion from an unfavorable position to a fair-minded and more favorable position. If you don't do it nobody else will or can.

They'll All Be in Chicago, Nov. 7-11. Don't Disappoint Them

Will Investigate Standards Abroad

A. I. Phillips, of the general engineering service of the American Gas Association, sailed for England on August 13, to investigate the lower heating value standards in effect in Great Britain. He will be gone about two months.



A 365¼-Day Industry

Like Tennyson's brook, the gas business "runs on forever." We can't lock up shop for the night, take a vacation during the dog days, close down because of high prices or get tired of doing business here and move elsewhere. We must stay on the job at all times, serving everybody alike, rich and poor.

The churches may be closed six days a week, the schools two days, the post office, banks and stores one day, but not your gas plant. No business requires more unselfish devotion to the maintenance of continuous and good service than does this one.

Interruption of service is practically unknown, has come to be considered almost a disgrace, and has been prevented only by the utmost care, intelligence and watchfulness. The gas business is a 24-hour, 365¼-day industry and its fires never go out, winter or summer, bad times or good times, day or night.

Service such as this deserves your good will.

(Insert the name of your Company here)

MEMBER OF THE AMERICAN GAS ASSOCIATION

Good Will Advertisement Number 17

COMMERCIAL SECTION

H. S. SCHUTT, Chairman — A. P. POST, Vice-Chairman

LOUIS STOTZ, Secretary

MANAGING COMMITTEE — 1921

At Large

ABBOTT, M. E., Taunton, Mass.
BARNES, CYRUS, Boston, Mass.
BARNITZ, F. R., New York, N. Y.
BARTHOLD, WM. H., New York, N. Y.
BENNITT, GEO. E., New York, N. Y.
DAVIES, J. E., Chicago, Ill.
GASTON, LUTHER, Lebanon, Pa.
GOULD, WM., Boston, Mass.
HEWITT, ARTHUR, Toronto, Ont., Can.
ILLIFFE, C. N., New York, N. Y.
KANE, A. M., Hamilton, Ohio
LEARNED, J. G., Chicago, Ill.
LEMKE, FRANK, Kalamazoo, Mich.
LOEBELL, HENRY O., New York, N. Y.
LONG, H. J., New Brunswick, N. J.
MYERS, J. B., Philadelphia, Pa.
POST, A. P., Philadelphia, Pa.
RUTLEDGE, F. J., Philadelphia, Pa.
SCHUTT, H. S., Philadelphia, Pa.
SHERWOOD, J. M., New York, N. Y.
SMITH, CHAS. S., Philadelphia, Pa.
STEPHANY, E. J., Pittsburgh, Pa.
YOUNG, R. R., Newark, N. J.

Representing Affiliated Societies

BURKE, E. J., Indianapolis, Ind. (Indiana)
CHAMBERLAIN, G. R., Grand Rapids, Mich. (Mich.)
CHAPIN, C. H. B., New York, N. Y. (Empire State)
CLARK, H. H., Chicago, Ill. (Illinois)
CORL, WILEY F., Mexico (Missouri)
CRAFTS, H. C., Pittsfield, Mass. (N. E. Gas Eng.)
CRANKSHAW, J. WARD, Allentown, Pa. (Pennsylvania)
FLAUTT, J. J., New Orleans, La. (South Central)
FORNEY, J. A., Charlotte, N. C. (Southern)
HANLAN, J. P., Newark, N. J. (New Jersey)
JOHNSON, W. B., Toronto, Ont. (Canadian)
MCARDLE, JAS., Macon, Ga. (Southern)
ST. JOHN, JOHN, Madison, Wis. (Wisconsin)
TAYLOR, W. H., Omaha, Neb. (Iowa District)
WEISS, FRANK, Los Angeles, Cal. (Pacific Coast)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Gas Lighting—F. R. BARNITZ, New York, N. Y.
Heating—GEO. E. BENNITT, New York, N. Y.
Industrial Fuel Sales—HENRY O. LOEBELL, New York, N. Y.
Industrial Fuel Contracts (Sub.) — CHAS. S. SMITH Philadelphia, Pa.
Customer Service—J. B. Myers, Philadelphia, Pa.
Merchandising—H. J. LONG, New Brunswick, N. J.
Nominating Committee—J. D. SHATTUCK, Chester, Pa.
Program—F. J. RUTLEDGE, Philadelphia, Pa.
Rate Structure—J. D. SHATTUCK, Chester, Pa.

How the Enthusiasm of Gas Salesmen Can Be Stimulated

ROY G. MUNROE, Denver Gas and Electric Company

THE most effective stimulation to the enthusiasm of a gas salesman is a system of compensation which maintains a direct ratio between his results accomplished and his pay check. To this should be added a keen interest shown by his superiors in his work. Some salesmen will decrease their efforts if praised, but a majority can be spurred to greater accomplishments by judicious recognition of merit.

The men who are doing the best work should be used as pace-makers for the less competent. The tail-enders should never be allowed to slow down the leaders; instead the top-notchers should be caused to regard the rest of the force as a pack in full cry at their heels. The man in the lead can be made to so appreciate his taste of leadership as to dread the time when he will be overtaken and outstripped.

In posting the records of the salesmen it is always best to use as a basis the

actual earnings of the men. The grumbler, the man who says "What's the use?", and tries to drag the man ahead down to his level instead of striving to surpass him, can be silenced most effectively by a record of the increased earnings of his fellow salesmen. He will scoff at points and standings as mere empty glories, but cold cash in the pay check commands his respect even against his will.

The comparative standings of the men should be kept constantly before them, spurring them on to increased effort. One very effective method of posting salesmens' records is to post them by percentages somewhat similar to baseball percentage standings. The standing of each man can be posted as percentage of the total commissions earned that day or that month, or as percentage of a certain quota or bogey fixed for each district, or as a percentage of a certain fixed total quota for the entire department. A column of total percentages to date should also be posted.

The man who finishes the season in first place—the pennant-winner—should be given some material recognition by the management, even if it be nothing but a championship pennant. A trip to the A. G. A. annual convention is a prize which will put ginger and sufficient enthusiasm into such a contest to completely overshadow such comparatively trifling interests as the baseball standings.

It is difficult to stimulate enthusiasm in a man whose health is poor. Right living should be taught, and as far as possible salesmen should be relieved from night-work, and encouraged to spend their time out-of hours in healthful recreation and exercise, and in well planned study and perusal of trade journals.

One of the greatest stimulents to enthusiasm is the record of successes achieved by salesmen who have gone before. The present earnings of such men, and the story of their rise should be constantly impressed upon salesmen to stimulate ambition and enthusiasm.

Gas salesmen should be required to maintain memberships in the A. G. A., and to subscribe at their homes to one or more gas periodicals, to participate in such various activities as local section meetings, contributions to the Association MONTHLY, etc.

A more effective means of stimulating the enthusiasm of gas salesmen is the daily meeting. The sales manager should preside, and should fill his men with enthusiasm for the day's work by means of a short, carefully planned exhortation. A good laugh or two should be encouraged, the successful experience of some salesmen should be related, and such scolding as may be necessary should be reserved for a private man-to-man conference, in order that each salesman may leave the meeting in the best of spirits. Visits from the officers and directors of the company, as well as from visiting gas men should be encouraged in order to maintain enthusiasm and evidence of the interest of the management in the efforts of each salesman.

Don't Let Them Page You in Vain in Chicago. Nov. 7-11

Making Your Window Bring Business

No. 2—Types of Window

IN STYLE OF TRIMMING, windows may be divided into two types: the extremely simple and artistic arrangement and the elaborate, well-filled window. Each of these, properly made up, has its own value and its own occasion for use. The first concentrates all of the attention on one single appliance or small group. A gas range which occupies the center of such a window trim must be in itself extremely attractive. A new or unique lamp or heater might effectively be displayed in this window. It is difficult, however, if not impossible, to make up a "one article" arrangement if the goods themselves are commonplace or uninteresting.

Such a window requires a special, decorative background. Effective picture borders and the colors of crepe ribbons, velour drapings, and autumn foliage, all suggest the warmth and cheer which the gas range is meant to symbolize, besides serving to attract initial attention to the window.

The second type of display is based on the idea that a passerby will be sure to see among all the articles presented to view, at least one of interest to him. This idea is perfectly true and windows containing a large number of various objects have proved again and again real 'salesmen'. The whole secret, however, of success with this type lies in the trimmer's ability to make it possible for the eye to select and concentrate upon any one article it may choose. Small appliances, range lighters, mantles, tubing, table accessories, etc., may fill a window, with good results, provided the effect of the whole is artistic and each individual group clearly distinguishable from the rest. This kind of window trimming takes the greatest skill. Needless to say, all superfluous furniture and fixtures should be left out. The background should be very plain and of a color which in itself will not attract attention. If all of the goods displayed emphasize one idea—i. e.—"heat" or "light" or "economy"—the value of the window will be greatly increased.

Many windows, it must be remembered, fall in a class half-way between these extremes. Also, it is wise to alternate from month to month, from the simple window to the elaborate one and back again. Variety in type of window is like rotation of crops.

A Case of Working Together

EDWARD A. WILLARD, Portland Gas Light Company

SOME years ago we learned that we were getting too little co-operation from the local furniture and stove stores in the sale of gas appliances. I made it a point to call personally on each of the stores in hope of ascertaining the objection they had to handling gas appliances. The most general complaint was that the Gas Company was selling the merchandise at cost and under these conditions, they naturally did not care to consider anything that burned gas.

After studying the situation we decided upon repricing our goods to embrace a profit. In the meantime I joined the Portland Stove Dealers' Association and read before the members several papers relative to the subject. I am sure that the membership with this association was the means of our becoming more closely connected with the local concerns.

We sell our appliances to the trade and allow them a reasonable discount; they sell at our price and never yet have I heard of any one of them cutting the price. Our goods are shown on the floor of sixteen concerns which usually carry only a sample line and the orders taken are filled from our stock.

We have been unable to get the plumbers to display a sample line of water heaters but on account of our agreement with them they have turned over to us many gas water heater orders that would otherwise have been straight coal installations.

Through a house to house canvass we had learned that many of the dealers were discouraging gas appliances and selling oil or gasoline stoves to inquiring customers and we realized then and there that the first offensive in a selling campaign must result in subjugating this antagonism. By securing their interest in our line and making it possible for them to realize a fair profit without involving any large investment there has resulted a more friendly feeling between us together with a mutual incentive to push gas as a fuel.

If the increase in sales resulting from this effort were little or nothing there would still remain a factor none the less valuable because of the inability to reckon it in dollars and cents.

Let's Go to Chicago!

GAS RANGE SALE

DURING

GAS RANGE WEEK

May 3rd to May 8th

SPECIAL DISCOUNT OF 10%

On all Gas Ranges and Water Heaters sold this week.

As low as $24.50 installed. Every range guaranteed to give satisfaction.

Make your selection early and take advantage of the large stock so you will surely get the stove that best suits your wants.

If you are contemplating having a Gas Range, don't fail to call this week at one of the following stores, and make your selection.

Bigelow Bailey Co. 190 Middle St.
Carleton Furniture Co. 580 Congress St.
Wm. J. Curran 109 Center St.
T. F. Foss & Sons 473 Congress St.
Halverson Bros. 189 Federal St.
Oren Hooper Sons 238 Middle St.
C. E. Howes 948 Congress St.
Madsen & Allen Co. 675 Forest Ave.
C. O.Morton 15 Bishop St.
F. & C. B. Nash 386 Fore St.
Portland Gas Light Co. 5 Temple St.
Standard Furn. Co. 35 Preble St.
Tolman Bradford Co. 325 Cumberland Ave.
F. E. Wheeler 530 Forest Ave.
C. A. Tilton Co. 115 Sawyer St., So. Portland

Don't Forget—This Week Only

One of the ads. used in the Portland Campaign.

A Closer Contact Between Manager and Industrial Consumer

SELLING gas for industrial use in any locality is limited only by the enterprise where fuel of any kind is required, except perhaps that required for large boilers furnishing steam for power and heating. Even this field offers great possibilities for new business where the gas and electric utility is combined in one organization. It often happens that with the substitution of central station electric power for steam, there is but a small amount of steam required for industrial heating. Such demands can easily be supplied by gas heated equipment.

In situations where the gas and electric utilities are under separate management any lack of "pulling together" of the two organizations is detrimental to the development of good-will, and is also detrimental to the development of their prospective properties.

One does not have to go very far into the past history of combination gas and electric companies to find the absence of a well defined policy on the subject of competition in the commercial departments. Until very recently there existed with some combination companies, separate interests in both the gas and electric departments fighting in the open before the public for competitive business. Under such circumstances, it is hard for the consumer to believe that the best interests of the public are being served.

Do you, Mr. Manager, show your industrial consumer your personal interest in him by occasional visits to the plant to talk over the service your company is giving? Do you delegate this to a subordinate, or do you do nothing of the kind? There is a need for a closer contact between the managers of gas properties and their industrial consumers.

We know of one or two instances where the use of gas in a big way is on trial. Inquiry has revealed the fact that the manager of the gas company has not called at the plant or even talked over the situation with the prospective consumer. Such a policy on the part of the manager does not bring about a feeling of good will with your prospect.

Adequate service to industrial consumers will keep down complaints. Adequate service should not cease at the consumer's meter. Trouble in the house piping does not argue for satisfactory fuel service delivered at the burner.

Are you sure, Mr. Manager, that your industrial customers are getting satisfactory service? There is only one way to be sure about it—find out for yourself by going to their factory. Do not cast the matter aside in the belief that the main, service and meter are large enough.

The house piping may be entirely too small for its length and the amount of gas to be consumed.

There may be a "burn through" meter in the house line of insufficient capacity.

The blower used to supply air may not be large enough or not have sufficient speed to deliver the required amount of air.

The burners may be too small for the amount of gas necessary to be burned. Moreover they may have become stopped up from one cause or another.

MANUFACTURERS SECTION

GEO. S. BARROWS, Chairman — JOHN S. DeHART, Jr., Vice-Chairman

MANAGING COMMITTEE — 1921

At Large

BARNES, W. W., Tucson, Ariz.
BARROWS, GEORGE S., Providence, R. I.
BRUCE, HOWARD, Baltimore, Md.
CONROY, J. P., New York, N. Y.
CRANE, WM. M., New York, N. Y.
DEHART, JR., J. S., Newark, N. J.
GRIBBEL, W. GRIFFIN, Philadelphia, Pa.
KOPPER, W. B., Brooklyn, N. Y.
KNAPP, F. H., Pittsburgh, Pa.
LEMKE, F. A., Kalamazoo, Mich.
LOHMEYER, H. B., New York, N. Y.
LONG, H. J., New Brunswick, N. J.
MCDONALD, DONALD, New York, N. Y.
MUELLER, ROBERT, Decatur, Ill.
NORTON, H. A., Boston, Mass.
ROPER, GEORGE D., Rockford, Ill.
SHERWOOD, J. M., New York, N. Y.
STITES, TOWNSEND, Gloucester, N. J.

Representing Affiliated Societies

BABCOCK, C. B., San Francisco, Calif. (Pacific Coast)
BARTLETT, C. E., Philadelphia, Pa. (Pennsylvania)
BREWER, E. D., Atlanta, Ga. (Southern)
CHAPIN, C. H. B., New York, N. Y. (Empire State)
ECCLES, GEO. W., Waltham, Mass. (N. E. Gas Eng.)
GIBSON, W. R., Toronto, Can. (Canadian)
KELSEY, L. D., Brookfield, Mo. (Missouri)
LONG, H. J., New Brunswick, N. J. (New Jersey)
MCCULLOUGH, CHAS., Milwaukee, Wis. (Wisconsin)
MILLER, THOS. D., Detroit, Mich. (Illinois)
ROPER, GEORGE D., Rockford, Ill. (Iowa Dist.)
SEIDENGLANZ, C. H., Dallas, Tex. (So. Central)
SCHALL, H. D., Detroit, Mich. (Michigan)
WARREN, W. M., St. Louis, Mo. (Iowa Dist.)
WESTON, J. A., Lansing, Mich. (Indiana)

Our prosperity is dependent upon the prosperity of those producing the gas utilized by our appliances—our interests are in common.

Meeting of the Managing Committee

THIS Committee of the Manufacturers' Section met at Association headquarters on July 6. The subject of "Merchandising" as presented by Mr. Alfred P. Post, after discussion resulted in the following resolution, the Secretary being instructed to communicate with Mr. Post and advise that the time is not ripe for concerted action on the subject of his letter, the consensus of opinion being that the idea is ideal but not practical at the present time. Manufacturers will be glad to cooperate with the Commercial Section on the subject at any future time should they so desire.

At the annual convention of the Association only one meeting of the Manufacturers' Section will be held. Mr. Charles Coolidge Parlin, Manager of the Division of Commercial Research of the Curtis Publishing Company has consented to address the Convention in the interests of the Manufacturers' Section, on the subject of "Merchandising Problems of the Gas Industry."

The following resolution was voted Mr. Barnes on the acceptance of his resignation as Secretary of the Section:

WHEREAS, WILL W. BARNES, upon instruction of his Medical adviser, has tendered his resignation as Secretary of the Manufacturers' Section of the American Gas Association, and is leaving for permanent residence on the Pacific coast; and

WHEREAS, WILL W. BARNES has for many years, with singleness of purpose, faithfully served the best interests not only of the manufacturers in the American Gas Association, but contributed largely to the welfare of the entire gas

industry in his capacity of adviser and leader among manufacturers of gas appliances: BE IT NOW

RESOLVED that the manufacturers of the American Gas Association do, reluctantly and with regret, concur in the acceptance of his resignation as Secretary of the Manufacturers' Section, and do express to him their sense of loss in his leavetaking, their appreciation of the many traits of character that have endeared him to them, and their gratitude for the wisdom with which he has administered the vexing problems devolving upon him as Secretary of the Manufacturers' Section, and that together with these records of loyal service now past, there be extended to him the simple hope and earnest wish that his future be rich in accomplishment and generous satisfaction in the ever increasing gratification of his friends.

Respectfully submitted,
J. S. DeHart
Townsend Stites
W. G. Gribbel
Committee.

To My Associate Manufacturer Company Members

In severing my relations with you I beg to express my deep appreciation for the confidence placed in me as your representative in Association work for the past ten years. Your loyal support in the work of the Manufacturers' Section made my duties pleasant ones. The friendships formed will always be cherished by me. Continued prosperity in your activities is my parting wish.

Will W. Barnes.

OUR NEW MANUFACTURER COMPANY MEMBERS

We are pleased to welcome into Manufacturer Company membership

Taylor Instrument Companies, Rochester, N. Y.

The Foxboro Co. Inc., Foxboro, Mass.

The Sands Mfg. Co., Cleveland, O.

Harlan Cooperative Coal Co., Lexington, Ky.

Bastian-Morley Co., La Porte, Ind.

Lindsay Light Co., Chicago, Ill.

Kennedy-Toombs, Inc., New York, N. Y.

Meeting of the Bench Builders Group

THE Bench Builders Group of the Manufacturers' Section of the American Gas Association has gotten together in an informal organization and has held several meetings in the last few months. The purpose of the organization is to become better acquainted and to take up and discuss questions of general interest to the members and the industry as a whole.

The last meeting was held in St. Louis in May and a meeting is scheduled to be held in Cleveland, Ohio, on August 4th.

One of the important matters that has been discussed is the standardization of the general dimensions, mouthpiece templets, pipe sizes, etc., for benches of 6's. This standardization has been the main work of the last few meetings and will be the important question at the Cleveland meeting. As soon as the standardization has been completed and found to be satisfactory and workable, a complete report will be sent in to the manufacturers' section.

The companies comprising the Bench Builders Group and which have been generally represented at all of the meetings

are
The Improved Equipment Co.,
The Gas Machinery Co.,
Missouri Fire Brick Co.,
The Parker Russell Mining & Mfg. Co.,
Russell Engineering Co.,
U. G. I. Contracting Co.,
Jas. Gardner Jr. Co.,
Isbell-Porter Co.,
J. H. Gautier & Company.

I Believe—

THAT today is the day since yesterday and that tomorrow will be a better day.

I BELIEVE in life, laughter and love.

I BELIEVE that there is joy in life, if ye will but live.

I BELIEVE that what we love we own—love life, that ye may live.

I BELIEVE that environment, which is adamant before weakness, is fluid before strength, purpose and work.

I BELIEVE that there is no more precious treasure for today, nor higher heritage for the future, than a friend.

I BELIEVE that, on the whole, the world isn't so bad—and is growing better.

I BELIEVE that nothing worth while is wasted—that everything was, is and will be.

I BELIEVE that to be good is well, to do good is better, to "make good" is best.

I BELIEVE that we are helped in attaining our ideals by knowing that our friends believe in us and expect great things of us.

I BELIEVE that laughter means red blood and long life.

I BELIEVE in the divinity of ALL, as well as the divinity of the ONE.

I BELIEVE in the hearty handshake, in hospitality, comradeship, friendship and love.

—Arthur Fisher, *Personality Magazine*

Associations Affiliated with A. G. A.

Canadian Gas Association

Date of Affiliation—Mar. 25, 1919
Pres.—C. S. Bagg, Montreal
Sec.-Tr.—G. W. Allen, Consumers' Gas Co., Toronto
Conv., 1922

Empire State Gas and Electric Association

Date of Affiliation—Nov. 21, 1919
Pres.—H. W. Peck, Adirondack Pr. & Lt. Corpn., Schenectady, N. Y.
Sec.—C. H. B. Chapin, Grand Central Terminal, New York, N. Y.
Conv., Oct. 6-7, 1921, Lake Placid, N. Y.

Illinois Gas Association

Date of Affiliation—Mar. 19, 1919
Pres.—H. H. Clark, 325 Peoples Gas Bldg., Chicago, Ill.
Sec.-Tr.—R. V. Prather, DeWitt-Smith Bldg., Springfield, Ill.
Conv., 1922

Indiana Gas Association

Date of Affiliation—April 24, 1919
Pres.—Morse Dell Plain, No. Indiana Gas & Elec. Co., Hammond, Ind.
Sec.-Tr.—E. J. Burke, Citizens Gas Co., Indianapolis, Ind.
Conv., 1922

Iowa District Gas Association

Date of Affiliation—May 21, 1919
Pres.—C. N. Chubb, United Light & Rwys. Co., Davenport, Ia.
Sec.-Tr.—H. R. Sterrett, Des Moines Gas Co., Des Moines, Ia.
Conv., 1922

Michigan Gas Association

Date of Affiliation—Sept. 18, 1919
Pres.—J. W. Batten, Detroit City Gas Co., Detroit, Mich.
Sec.-Tr.—A. G. Schroeder, Grand Rapids Gas Light Co., Grand Rapids, Mich.
Conv., Sept. 29-30, 1921, Detroit, Mich.

Missouri Association of Public Utilities

Date of Affiliation—June 18, 1920
Pres.—H. Spochrer, Union Elec. Lt. & Pr. Co., St. Louis, Mo.
Sec.-Tr.—F. D. Beardslee, 315 N. 12th St., St. Louis, Mo.
Wiley F. Corl, Chmn. Affiliation Com., Missouri Utilities Co., Mexico, Mo.
Conv., 1922

New England Association of Gas Engineers

Date of Affiliation—Feb. 19, 1919
Pres.— Burton Smart, Portland Gas Lt. Co., Portland, Me.
Sec.-Tr.—J. L. Tudbury, Salem Gas Light Co., Salem, Mass.
Conv., 1922

Gas Sales Association of New England

Date of Affiliation—Oct. 1, 1919
Gov.—H. J. Pettengill, Jr., Blackstone Valley Gas & Electric Co., Pawtucket, R. I.
Sec.—M. Bernard Webber, 150 Congress St., Boston, Mass.
Annual Meeting, 1922

New Jersey State Gas Association

Date of Affiliation—April 25, 1919
Pres.—H. H. Newman, Public Service Gas Co., Trenton, N. J.
Sec.-Tr.—H. E. Mason, Consolidated Gas Co. of N. J., Long Branch, N. J.
Conv., 1922

Pacific Coast Gas Association

Date of Affiliation—Sept. 18, 1919
Pres.—W. M. Kapus, Northwest Gas & Electric Equipment Co., Portland, Ore.
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Conv., Sept. 20-23, 1921, Del Monte, Cal.

Pennsylvania Gas Association

Date of Affiliation—April 10, 1919
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Date of Affiliation—Oct. 15, 1919
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Date of Affiliation—May 20, 1919
Pres.—L. I. Pollitt, Southern Gas & Electric Corpn., Lexington Bldg., Baltimore, Md.
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Coefficients of Cubical Expansion of Coal Tar Products

JOHN MORRIS WEISS

This is the second of a series of articles contributed by members of the Chemical Committee on chemical subjects of interest to gas men. The first article, "Results of Analysis of Standard Sample of Mixed Coal and Water Gas," by A. C. Fieldner and G. W. Jones was published on page 365 of the June-July issue. These are published not only for the information of our members but to stimulate interest in the chemical phases of our industry. The articles are not intended to be limited to the membership of the Chemical Committee but it is hoped that all chemists in the gas, coke oven and allied industries will take an interest in this work and will contribute articles from time to time. Articles of 2500 words or less are preferred and if your contribution embraces no more than a paragraph it will be welcome if it has a bearing on the chemical development of the industry. Address all communications to the Chairman of the Chemical

[1] *Jour. Franklin Institute*, September 1911. p. 277.
[2] *Jour. Industrial & Engineering Chem.*, Vol. 10, No. 12 p. 1016.
[3] *Proceedings Amr. Wood Pres. Assoc.* 1918.

Committee or the Secretary of the Section, % Association Headquarters.

In 1911 the writer published an article on the coefficient of expansion of tar[1] in which he gave results obtained on the determination of the coefficients of cubical expansion of fourteen typical tars, including water gas tars and various types of horizontal retort gas works and by-product coke oven coal tars over the temperature range of 15.5° C. (60° F.) to 60° C. (140° F.). There was one error in this paper which was never noted publicly, namely in the formula at the top of page 279 which read

$$V_{60} = V - V\ (t\text{-}60)\ C$$

and which should have been

$$V_{60} = \frac{V}{1 + (t-60)C}$$

Later W. J. Huff[2] pointed out the effect of the crystallization of solids such as naphthalene on the cubical expansion of creosote oil and the very considerable volume shrinkage that takes place during the crystallization and also showed the effect of the simultaneous expansion of the container for the liquid, proposing an approximate correction factor to be used in such work. The writer with S. R. Church[3] considered in detail the commercial effect of Dr. Huff's findings in the purchase and sale of creosote oil containing solids.

From time to time over the last ten years, we have had occasion in our research laboratories to determine coefficients of cubical expansion of various products made or used by us and it seems worth while to us to briefly collate the results obtained in the belief that they will be useful to other workers in the field.

Methods—In all cases the coefficients of cubical expansion were calculated from density determinations at various temperatures and different expedients were used to determine the density of some of the materials at the higher temperatures using both metal and glass pycnometers. As, however, there is little of any novelty in the experimental methods used we will dismiss this portion with the statement that all methods were carefully checked against known materials to insure their accuracy. In the results given below the coefficients of cubical expansion as given are absolute, that is no account has been taken of the expansion of the container. In ordinary practice, in measuring tanks or tank cars, an approximate correction can be applied by deducting from the absolute coefficient as given the coefficient of cubical expansion of the material of which the container is made, in the case of iron or steel, the usual material, amounting to approximately .000033 for the Centigrade coefficient (.00002 for Fahrenheit). The use of this factor is mathematically correct for a full tank which overflows with increasing temperature. For partially full tank, the theoretically correct method involves the use of long and complicated formulae and the difference in results between it and the approximate method is so small as to be far within the ordinary physical accuracy of the measurements.

Results—The results are shown in tabular form. The use of the coefficients in the practical correction of volumes may be made by the use of the following formula:

Let V_o = volume at lower temperature
V = volume at higher temperature
t_o = lower temperature
t = higher temperature
a = coefficient of cubical expansion

then

$$V_o = \frac{V}{1 + (t - t_o)a}$$

TABLE I

TARS

Materials	Insoluble in benzol	Sp. gr. at 15.5° C.	Average coef. of cub. ex. °C.	Temperature range. Centigrade
Water gas tar	1.04	1.073	.000675	15° - 80°
" " "	1.08	1.090	.000639	"
Horizontal gas wks. tar	16.7	1.203	.000562	"
" " " "	18.5	1.205	.000562	"
" " " "	27.5	1.249	.000560	"
" " " "	33.2	1.296	.000490	"
Vert. ret. tar	6.0	1.155	.000634	0° - 80°
" " "	5.6	1.155	.000633	"
" " "	5.1	1.144	.000646	"
Coke oven tar	8.1	1.207	.000569	"
" " "	...	1.202	.000570	15° - 80°
" " "	9.0	1.185	.000607	"
" " "	5.3	1.193	.000603	"
" " "	4.0	1.178	.000594	"
" " "	6.7	1.195	.000585	"
" " "	6.6	1.197	.000561	"
" " "	9.1	1.203	.000561	"
" " "	19.1	1.258	.000553	"
" " "	15.0	1.231	.000549	"

TABLE II

REFINED TARS AND PITCHES

Material	Cube M. Pt.	Insoluble in benzol	Sp. gr. 15.5° C.	Av. coef. cub. exp. ° C.	Temperature range ° C.
Refined Tar	....	19.5	1.238	.000569	15°—140°
Coal, tar, pitch	106° F.	26.6	1.269	.000462	15°—150°
" " "	137° F.	31.0	1.298	.000437	"
" " "	139° F.	12.8	1.256	.000482	"
" " "	160° F. (air)	37.1	1.313	.000493	15°—250°
" " "	213° F. (air)	48.1	1.357	.000430	15°—180°
" " "	270° F. (air)	43.8	1.318	.000423	15°—250°
Water gas tar pitch	162° F.	13.5	1.218	.000474	15°—150°

The coefficients given will not, of course, meet every condition with accuracy as in general the coefficients of cubical expansion of tar products rise with the temperature and, therefore, the figures given only represent averages of temperature ranges and of materials. To have different coefficients to fit each special case would, however, be impractical. The benzol, toluol and solvent figures given are for the range 15° - 70° C. Reference to Table V will show that from 5° - 25° C. the figures are materially less.

The tar oil figures apply only to the liquid phase. Where crystals are forming, no definite coefficient can be used. This also applies to phenol and orthocresol below their solidifying points.

TABLE III—TAR OILS

Material	Sp. gr. 15.5° C.	Distillation 210°	235°	315°	355°	Av. coef. cub. exp. ° C.	Temperature range ° C.
Creosote oil	1.092	....	0	57.5	80.2	.000703	15°—80°
" "	1.079	1.6	23.6	63.1	82.7	.000724	"
" "	1.075	2.8	18.4	64.4	84.3	.000728	30°—70°
" "	1.041	6.9	43.1	82.9	90.0	.000830	38°—70°
Carbolic oil	1.015	....	....	....	....	.000828	15°—60°
" "	1.026	....	....	....	....	.000783	"
" "	1.013	....	....	....	....	.000760	15°—25°
Water gas tar oil	0.999	....	....	....	....	.000770	15°—60°
" " " "	1.004	....	....	....	....	.000766	"
" " " "	1.009	....	....	....	....	.000762	"
Drip oil from gas holders	0.903	....	....	....	....	.001030	"
" " " "	0.925	....	....	....	....	.000982	"
" " " "	0.885	....	....	....	....	.001030	"
" " " "	....	....	....	....	....	.001060	25° – 35°

TABLE IV—PHENOLIC BODIES

Material	Characteristics	Av. coef. cub. exp. ° C.	Temperature range ° C.
Phenol U. S. P.	40° C. Solidifying point	.000847	45°—80°
Ortho-cresol	30.1° C. Solidifying point	.000876	15°—70°
M-P-cresol	60% Meta, 40% Para	.000814	"
Crude acids	89% Acid content	.000785	0° —80°
Crude xylenols	Boiling point 206°—230° C	.000813	15° – 80°

TABLE V

BENZOLS AND NAPHTHAS

Material	Characteristics	Av coef of cub. exp. °C.	Temperature range °C.
Benzol - pure	2° range	.001280	15° - 60°
Benzol - pure	2° "	.001110	5° - 25°
Toluol - pure	2° "	.001140	15° - 70°
Toluol - pure	2° "	.001017	5° - 25°
Xylol - pure	Boiling point 136.9-137.5° C.	.001060	15° - 80°
Refined solvent	" " 135 - 175° C.	.001025	0° - 70°
Refined solvent	" " " "	.000950	5° - 25°
Crude heavy naphtha	" " 160°-297° C. 60% at 200°	.000880	0° - 70°

TABLE VI

MISCELLANEOUS

Material	Characteristics	Aver. coef. of cub. exp. °C.	Temperature range °C.
Crude naphthalene	Melting point 72.6° C.	.000440 (solid)	0° - 70°
Refined "	Flake	.000309 to .000457 (solid)	"
Tar paint No. 1	Specific gravity at 15.5° C. 1.067	.000684	0° - 38°
Tar paint No. 2	Specific gravity at 15.5° C. 1.097	.000651	"

Conclusions:

As in practical work it is not possible to use different coefficients with each type of a particular material, average figures must be employed and the errors due to this source are not usually very large, being in general well within the physical limits of accuracy of tank measurement. With this in mind the following figures are recommended for use, with the reservation that in addition suitable provision should be made to take into account the expansion of the container as previously described.

	°C.	°F.
Water gas tars	.000655	.000365
Vertical retort tars	.000640	.000355
Coke oven tars	.000575	.000320
Horizontal gas work tars	.000550	.000300
Pitches	.000460	.000255
Creosote oils	.000730	.000410
Carbolic oils	.000800	.000444
Gas drip (holder oils)	.001000	.000555
Phenol (liquid)	.000850	.000470
Ortho-cresol (liquid)	.000875	.000485
Meta & para cresol & xylenols	.000815	.000450
Crude tar acids	.000785	.000435
Pure benzol	.001280	.000710
Pure toluol	.001140	.000690
Pure xylol	.001060	.000570
Refined solvent	.001025	.000515
Heavy naphtha (crude)	.000880	.000490
Crude naphthalene (solid)	.000440	.000245
Refined " "	.000310	.000170
Tar paints	.000630	.000370

The crude heavy naphtha tested was rather high boiling (60 per cent. at 200° C.) and lower boiling heavy naphthas would be somewhat intermediate between this and refined solvent.

The figures for crude and refined naphthalene represent the solid phase, no liquid phase figures being available at present. The lowest figures obtained for solid naphthalene is regarded as most accurate, the variations in this determination being due to the difficulty of removing occluded air from the solidified material.

It is interesting to note that in general, in the aromatic series of hydrocarbons the coefficient of cubical expansion decreases as the boiling point and molecular weight rise and, further, that the phenols have coefficients not far different from hydrocarbon oils of the same boiling point range.

Finally, the writer would note that the character of tars is constantly changing and when dealing with such complex mixtures it is necessary from time to time to check up results on these materials and keep our knowledge up to date in line with the changing conditions.

Get a New Viewpoint! Widen Your Horizon! Chicago, Nov. 7-11.

Recent Articles in Chemical Press of Interest to Gas Men

Contributed by Sub-Committee on Abstracts* of the Chemical Committee

INDICATORS FOR CARBON DIOXIDE AND OXYGEN IN AIR AND FLUE GAS. By L. H. Milligan, D. O. Crites and W. S. Wilson, *Bureau of Mines Tech. Paper 238*, 23 (1920). Construction and operation are described of portable instruments designed in the research laboratory of the Pittsburgh Experiment Station. CO_2 is absorbed by NaOH; O is absorbed by alk. pyrogallate. For details see the original. (E. C. Uhlig.)

DISTILLATION OF SHALE OIL. By James A. Bishop, *Mining Sci. Press 120*, 371-5 (1920). A semi-popular review. (E. C. Uhlig.)

COAL AS A FUTURE SOURCE OF OIL SUPPLY. By Arthur Duckham, *Gas World, 73*, 332-3 (1920), *Gas Journal, 152*, 217 (1920). (E. C. Uhlig).

TRAINING OF THE GAS WORKS CHEMIST. By F. B. Small, *Gas World, 73*, 433 (1920). (E. C. Uhlig).

HEAT UNIT ECONOMY ON GAS WORKS. By K. Bunte, *Gas Journal, 152*, 389-91 (1920). (E. C. Uhlig).

ESTIMATION OF BENZENE IN COKE OVEN GAS AND SCRUBBING OIL. By L. Shuttleworth, *Gas World, 72, No. 1863*. (E. C. Uhlig).

A STUDY OF THE REACTION OF COAL SULPHUR IN THE COKING PROCESS. By A. R. Powell, *Jour. Ind. and Eng. Chem., 12*, 1069-77 (1920). (E. C. Uhlig).

THE DESULPHURIZING ACTION OF HYDROGEN ON COKE. By A. R. Powell, *Jour. Ind. and Eng. Chem., 12*, 1077-81 (1920). (E. C. Uhlig).

GAS ANALYSIS BY ABSORPTION AND TITRATION. By R. S. Tour, *Chem. and Met. Eng. Jour., 23*, 1104-6 (1920). (E. C. Uhlig).

MODERN DEVELOPMENTS IN THE MANUFACTURE AND UTILIZATION OF COAL GAS. By F. J. West and T. A. Tomlinson, *Gas World, 73*, 444-6 (1920), *Gas Journal, 152*, 576-7 (1920). (E. C. Uhlig).

MASSACHUSETTS LOW B. T. U. GAS TESTS. By L. J. Willien, *Gas Age, 46*, 515-7 (1920). (E. C. Uhlig).

AIR PURGE SYSTEM IN WATER GAS SETS. By G. H. Smith, *Gas Age, 46*, 502-5 (1920). (E. C. Uhlig).

EXPERIENCE WITH THE DIRECT RECOVERY OF SULPHATE OF AMMONIA. By A. G. Cheal, *Gas Journal, 152*, 515 (1920), *Gas World, 73*, 452 (1920). (E. C. Uhlig).

CARBONIZATION IN 1920. By Thos. Settle, *Gas Journal, 152*, 692-4 (1920). (E. C. Uhlig).

MODERN COKE PLANT AT BIRMINGHAM, ALA. By J. M. Hastings, Jr., *Gas Age, 46*, 461-5, (1920). (E. C. Uhlig).

A NEW METHOD FOR THE DETERMINATION OF SULPHUR IN OILS. By C. E. Waters, *Jour. Ind. and Eng. Chem. 12*, 482-5 (1920). Supplementary note, 612. (E. C. Uhlig).

THE DETECTION OF OILS OTHER THAN LINSEED IN PAINTS BY MEANS OF THE HEXABROMIDE NUMBER OF THE FATTY ACIDS. By H. Bailey and W. D. Baldsiefen, *Jour. Ind. and Eng. Chem., 12*, 1189-94 (1920). (E. C. Uhlig).

HARDNESS OF SURFACE WATERS IN U. S. By W. D. Collins, *Jour. Ind. and Eng. Chem., 12*, 1181-3 (1920). (E. C. Uhlig).

OPERATION OF CONTINUOUS TYPE LIME—SODA ASH WATER SOFTENER. By R. F. Catherman and H. C. Fisher, *Chem and Met. Eng. Jour., 23*, 526-8 (1920). (E. C. Uhlig).

MANUFACTURE OF MOTOR SPIRIT IN GAS WORKS. By J. Nicholls, *Gas World, 73*, 403-4 (1920). (E. C. Uhlig).

DETERMINATION OF THE CALORIFIC VALUE OF THE VOLATILE CONSTITUENTS AS A MEASURE OF ITS SUITABILITY FOR GAS MANUFACTURE. By R. Mezger and M. Muller, *Jour. Gasbeleuchtung, 63*, 669-73 (1920). (E. C. Uhlig).

GASIFICATION OF COAL IN ROTARY OVENS. Anon., *Jour. Gasbeleuchtung, 63*, 567-8, (1920). (E. C. Uhlig.)

COMPARISON OF VARIOUS METHODS OF WATER PURIFICATION. By Wm. Macklin Taylor, *Chem. and Met. Eng. Jour., 24*, 123-8 (1920). (E. C. Uhlig).

THE THEORY OF GAS-SCRUBBING TOWERS WITH INTERNAL PACKING. By W. B. Van Arsdel, *Chem. and Met. Eng. Jour., 23*, 1115-6 (1920). (E. C. Uhlig).

ELECTRIC VS. GAS MELTING OF BRASS. By H. M. St. John and A. E. Rhoads, *Brass World, 17*, 81-3 (1921). Polemical. Includes valuable cost data.

*Abstractors names appear in brackets following each item.

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Charles A. Hones, Inc., Baldwin, Long Island, N. Y.

BURNERS (Industrial)—(Continued)
Hale Manufacturing Co., Chicago, Ill.
Hugo Manufacturing Co., West Duluth, Minn.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
The Maxon Furnace & Engineering Co., Muncie, Ind.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Needham Gas Appliance Co., 1 S. Lafayette St., New York City.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Eclipse Stove Co., Mansfield, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.

BURNERS (Lighting)
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Lindsay Light Co., New York—Chicago
Welsbach Co., Gloucester, N. J.

BY-PRODUCT OVENS
Andrews Engineering Co., Inc., Chicago, Ill.
By-Product Coke Corp., Chicago, Ill.
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
Semet-Solvay Co., Syracuse, N. Y.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Koppers Co., Pittsburgh, Pa.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.

BY-PRODUCT RECOVERY APPARATUS
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
Isbell-Porter Co., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Koppers Co., Pittsburgh, Pa.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

CALORIMETERS
American Meter Co., Inc., New York, N. Y.
The Brown Instrument Co., Phila., Pa.
Lambert Meter Co., Inc., Bush Terminal Bldg., Brooklyn, N. Y.
Maryland Meter Works, Baltimore, Md.
D. McDonald & Co., Albany, N. Y.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.
Superior Meter Co., Brooklyn, N. Y.

CASING, TUBING (Steel)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

CASTINGS (Grey Iron)
Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
The Bartlett Hayward Co., Baltimore, Md.
The Western Gas Construction Co., Fort Wayne, Ind.

CHARGING COAL
Isbell-Porter Co., Newark, N. J.
Phillips, Lang & Co., Chicago, Ill.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

CHECKER BRICK
Laclede Christy Clay Products Co., St. Louis, Mo.

CHIMNEYS (Radial Brick)
Alphons Custodis Chimney Construction Co., Marquette Bldg., Chicago, Ill.

COAL AND COKE (Conveyors, Crushers, Screeners)
R. H. Beaumont Co., 315 Arch St., Philadelphia, Pa.
Riter-Conley Company, Pittsburgh, Pa.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Isbell-Porter Co., Newark, N. J.
Phillips, Lang & Co., Chicago, Ill.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Godfrey Conveyor Co., Elkhart, Ind.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

COAL TAR PRODUCTS & CHEMICALS
The Barrett Company, 17 Battery Place, New York, N. Y.

COCKS (Ranges, Water Heaters, Service and Meter)
A-B Stove Co., Battle Creek, Mich.
Acme Brass Works, Detroit, Mich.
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Hays Mfg. Co., Inc., Erie, Pa.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Kitson Co., 2837 Oakford St., Philadelphia, Pa.
The McRae-Roberts Co., Detroit, Mich.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Peninsular Brass Works, Detroit, Mich.
Standard Brass Works, Detroit, Mich.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Roberts Brass Mfg. Co., Detroit, Mich.

COMPOUND FOR CLEANING GAS METERS AND GAS STOVES
Standard Chemical & Supply Co., Cambridge A, Mass.

COMPRESSORS
Plant Engineering & Equipment Co., 192 Broadway, New York, N. Y. (Air Compressors).
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

CONDENSERS
Cruse-Kemper Co., Ambler, Pa.
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Isbell-Porter Co., Newark, N. J.
Riter-Conley Company, Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Stacey Manufacturing Co., Cincinnati, Ohio
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

COOKING AUXILIARIES
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Duparquet, Huot & Moneuse Co., 108 W. 22nd St., New York, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
The G. S. Blodgett Co., Burlington, Vt.
The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Scott Gas Appliance Co., 1311 E. St., N. W., Washington, D. C.

COUPLINGS
S. R. Dresser Mfg. Co., Bradford, Pa.

COVERINGS (cold pipe, steam pipe, tank and boiler)
Armstrong Cork Co., Pittsburgh, Pa.
Johns-Manville Inc., Madison Ave. and 41st St., New York, N. Y.

CYLINDERS (Pressure)
National Tube Co., Frick Bldg., Pittsburgh, Pa.
DECALCOMANIA PRODUCTS
The Meyercord Co., Inc., Chamber of Commerce Bldg., Chicago, Ill.

DISINFECTANTS
The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

DYES, DISINFECTANTS, DRY COLORS
The Sherwin-Williams Co., Cleveland, Ohio, New York, N. Y.

ELECTRIC CONTROLLING DEVICES
The Cutler-Hammer Mfg. Co., Milwaukee, Wis.

ELEVATORS
Craig Ridgway & Son Co., Coatesville, Pa.
Phillips, Lang & Co., Chicago, Ill.

ENAMELS AND JAPANS (Heat Resisting)
The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

EXCHANGES (Heat)
The Bartlett Hayward Co., Baltimore, Md.
Riter-Conley Company, Pittsburgh, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

EXPERT APPRAISAL
Steere Engineering Co., Detroit, Mich.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

EXTRACTORS (Tar, Dust, Fumes)
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Isbell-Porter Co., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

FITTINGS
A-B Stove Co., Battle Creek, Mich.
Acme Brass Works, Detroit, Mich.
Aws Manufacturing Co., New York, N. Y.
Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Davis & Farnum Mfg. Co., Waltham, Mass.
S. R. Dresser Mfg. Co., Bradford, Pa.
Erie Stove & Mfg. Co., Erie, Pa.
Grinnell Co., Inc., Providence, R. I.
Kitson Co., 2827 Oakford St., Philadelphia, Pa.
The McRae & Roberts Co., Detroit, Mich.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Peninsular Brass Works, Detroit, Mich.
Shapiro & Aronson, Inc., 20 Warren St., New York, N. Y.
Standard Brass Works, Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Roberts Brass Mfg. Co., Detroit, Mich.
The Western Gas Construction Co., Fort Wayne, Ind.
Welsbach Co., Gloucester, N. J.

FITTINGS (Malleable Iron)
Detroit Brass & Malleable Works, Detroit, Mich.

FLEXIBLE TUBING AND ENDS
Atlantic Tubing Co., Providence, R. I.
Bishop Gutta Percha Co., 420 E. 23th St., New York, N. Y.
Eastman Mfg. Co., Manitowoc, Wis.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.

FLASHLIGHTS AND BATTERIES
Will W. Barnes, Tucson, Ariz.
Diamond Electric Specialties Corp., Newark, N. J.
French Battery & Carbon Co., Madison, Wis.
Novo Mfg. Co., 424 W. 33d St., New York, N. Y.

FUEL BRIQUETTING
Foundation Oven Corporation, Woolworth Building, New York, N. Y.

FURNACES
American Gas Furnace Co., 24 John St., New York, N. Y.
Century Stove & Mfg. Co., Johnstown, Pa.
Eriez Stove & Mfg. Co., Erie, Pa.
Geist Mfg. Co., Atlantic City, N. J.
Charles A. Hones, Inc., Baldwin, Long Island, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Maxon Furnace and Engineering Co., Muncie, Ind.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Needham Gas Appliance Co., Inc., 1 S. Lafayette St., New York, N. Y.
Russell Engineering Co., St. Louis, Mo.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.

FUSES
Johns-Manville Co., Madison Ave. and 41st, St., New York, N. Y.

GAS COAL PRODUCERS
Harlan Co-operative Coal Co., Lexington, Ky.

GAS ENGINES
The Bartlett Hayward Co., Baltimore, Md.

GAS ENGINE COCKS AND VALVES
Standard Brass Works, Detroit, Mich.

GAS IRONS
A-B Stove Co., Battle Creek, Mich.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Milwaukee Gas Specialty Co., Milwaukee, Wis.
Benson Mfg. Co., Chicago, Ill.
Strause Gas Iron Co., Philadelphia, Pa.

GAS LEAK INDICATORS
Taylor Instrument Companies, Rochester, N. Y.

GAS LOGS
Will W. Barnes, Tucson, Ariz.
Strait & Richards, Inc., Newark, N. J.

GAS MAIN BAGS AND GAS MAIN STOPPERS
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.

GAS MIXERS
American Gas Furnace Co., 24 John St., New York, N. Y.
Century Stove & Mfg. Co., Johnstown, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eriez Stove & Mfg. Co., Erie, Pa.
Geist Mfg. Co., Atlantic City, N. J.
Grinnell Co., Inc., Providence, R. I.
Hays Mfg. Co., Inc., Erie, Pa.
Improved Appliance Co., Inc., 419 Kent Ave., Brooklyn, N. Y.
Hale Manufacturing Co., Chicago, Ill.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Maxon Furnace & Engineering Co., Muncie, Ind.
Strait & Richards, Inc., Newark, N. J.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

GAS PLANTS (Blue)
Gas Engineering Co., Ingram Ave., Trenton, N. J.
The Gas Machinery Co., Cleveland, Ohio
The Bartlett Hayward Co., Baltimore, Md.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

The Western Gas Construction Co., Fort Wayne, Ind.

GAS PLANTS (OIL)
The Bartlett Hayward Co., Baltimore, Md.

GAS PLANTS (Carbureted Water)
Gas Engineering Co., Ingram Ave., Trenton, N. J.
The Bartlett Hayward Co., Baltimore, Md.
Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Stacey Manufacturing Co., Cincinnati, Ohio
The U. G. I Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

GAS PLANTS (Coal) (Engineers)
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Isbell-Porter Co., Newark, N. J.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Riter-Conley Company, Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
Semet-Solvay Co., Syracuse, N. Y.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Stacey Manufacturing Co., Cincinnati, Ohio
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

GAS RANGE WATER HEATERS
Elliott Water Heater Co., Inc., 1246 Myrtle Ave., Brooklyn, N. Y.

GOVERNORS, PRESSURE VACUUM & PUMP
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.

HEATERS (Room)
American Stove Co., St. Louis, Mo.
Century Stove & Mfg. Co., Johnstown, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.
Eriez Stove & Mfg. Co., Erie, Pa.
Estate Stove Co., Hamilton, Ohio
Geist Mfg. Co., Atlantic City, N. J.
General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
Grinnell Co., Inc., Providence, R. I.
The J. H. Grayson Mfg. Co., Athens, Ohio
Hugo Manufacturing Co., West Duluth, Minn.
Illinois Specialty Mfg. Co., Bloomington, Ill.
Kidde & Co., 103 Park Ave., New York, N. Y.
Kennedy Toombs, Inc., 12 Eleventh Ave., New York, N. Y.
Lawson Mfg. Co., Pittsburgh, Pa.
Masdon Mfg. Co., Cambridge, Mass.
New Process Stove Co. Div., Cleveland, Ohio
Reliable Stove Co. Div., Cleveland, Ohio
Reznor Mfg. Co., Mercer, Pa.
Roberts & Mander Stove Co., Philadelphia, Pa.
J. B. Slattery & Bro. Inc., 108-110 Lawrence St., Brooklyn, N. Y.
Strait & Richards, Inc., Newark, N. J.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Ohio State Stove & Mfg. Co., Columbus, Ohio.
The Sanitary Heating Co., 233 37th St., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

HEATERS (Garage)
Gallagher Boiler Co., Laclede Gas Bldg., St. Louis, Mo.
Kidde & Co., 103 Park Ave., New York, N. Y.
Masdon Mfg. Co., Cambridge, Mass.

HEATERS (Pressing and Soldering Irons)
American Stove Co., St. Louis, Mo.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
Estate Stove Co., Hamilton, Ohio
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Charles A. Hones, Inc., Baldwin, Long Island, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Strait & Richards, Inc., Newark, N. J.
The Bryant Heater & Mfg. Co., Cleveland, Ohio, and Chicago, Ill.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

HIGH PRESSURE SYSTEMS
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Needham Gas Appliance Co., Inc., 1 S. Lafayette St., New York City.
Selas Co., 521 W. 23d St., New York, N. Y.
The Connersville Blower Co., Connersville, Ind.
The Gas Machinery Co., Cleveland, Ohio
The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

HOLDERS (Structural Steel Works))
Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
Camden Iron Works, Camden, N. J.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Riter-Conley Company, Pittsburgh, Pa.
The Bartlett Hayward Co., Baltimore, Md.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Manufacturing Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

HOT PLATES
American Stove Co., St. Louis, Mo.
A-B Stove Co., Battle Creek, Mich.
Century Stove & Mfg. Co., Johnstown, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.
Eriez Stove & Mfg. Co., Erie, Pa.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Rathbone, Sard & Co., Albany, N. Y.
J. B. Slattery & Bro., Inc., 108-110 Lawrence St., Brooklyn, N. Y.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Eclipse Stove Co., Mansfield, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Michigan Stove Co., Detroit, Mich.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.
The Ohio State Stove & Mfg. Co., Columbus, Ohio
Union Stove Works, 20 Beekman St., New York, N. Y.
Weir Stove Co., Taunton, Mass.

INDUSTRIAL FLOORING
Johns-Manville Inc., Madison Ave. and 41st St., New York, N. Y.

IRONING MACHINES
American Ironing Machine Co., 168 N. Michigan Ave., Chicago, Ill.
Barnett Foundry & Machine Co., Lyons Ave., Irvington, N. J.

INCINERATORS
Estate Stove Co., Hamilton, Ohio
Odorless Incinerator Co., Philadelphia, Pa.
Ruud Mfg. Co., Pittsburgh, Pa.

INSTRUMENTS (Measuring, Testing and Recording)
American Meter Co., Inc., New York, N. Y.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, Ohio
The Brown Instrument Co., Phila., Pa.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
The Foxboro Co., Inc., Foxboro, Mass.
Lambert Meter Co., Inc., Bush Terminal Bldg., Brooklyn, N. Y.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Precision Instrument Co., 21 Halsey St., Newark, N. J.
Republic Flow Meters Co., 565 Washington Blvd., Chicago, Ill.
Steere Engineering Co., Detroit, Mich.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
Taylor Instrument Companies, Rochester, N. Y.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

INSULATING MATERIALS
Armstrong Cork Company, Pittsburgh, Pa.
Celite Products Co., 11 Broadway, New York, N. Y.
Davis & Farnum Mfg. Co., Waltham, Mass.
Johns-Manville Inc., Madison Ave. and 41st St., New York, N. Y.

KILNS (For Firing Glass, China and Pottery)
B. F. Drakenfeld & Co., Inc., 50 Murray St., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Russell Engineering Co., St. Louis, Mo.

KILNS
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

LABORATORY (Flash and Fire Test Apparatus)
Taylor Instrument Companies, Rochester, N. Y.

LIGHTERS (Ranges)
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Will W. Barnes, East Orange, N. J.
Milwaukee Gas Specialty Co., Milwaukee, Wis.
J. M. Sherwood Co., New York, N. Y.
Strause Gas Iron Co., Philadelphia, Pa.
The Michigan Stove Co., Detroit, Mich.
Welsbach Co., Gloucester, N. J.

LIGHTING (Fixtures)
Will W. Barnes, Tucson, Ariz.
Salem Brothers, 122 Centre St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

LIGHTING (Gas Domes, Portables, etc.)
Will W. Barnes, Tucson, Ariz.
Kramer Bros. Lamp Co., 585 Broadway, New York, N. Y.
Royal Art Glass Co., 243 Canal St., New York, N. Y.
Salem Brothers, 122 Centre St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

LIGHTING (Glassware)
Salem Brothers, 122 Centre St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

LIGHTING (Incidentals)
Storrs Mica Co., Owego, N. Y.

LIGHTING (Mantles)
General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
Lindsay Light Co., New York, N. Y.
Welsbach Co., Gloucester, N. J.

MASKS (Tubular and Other Self-Contained Oxygen Apparatus)
American Atmos Corporation, 105 West 40th St., New York, N. Y.

METAL RECEPTACLES
American Gas Furnace Co., 24 John St., New York, N. Y.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Charles A. Hones, Inc., Baldwin, Long Island, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
United Lead Co., 111 Broadway, New York, N. Y.

METERS
American Meter Co., Inc., New York, N. Y.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, Ohio
Cleveland Gas Meter Co., Cleveland, Ohio
Equitable Meter Co., Pittsburgh, Pa.
The Foxboro Co., Inc., Foxboro, Mass.
John J. Griffin & Co., 1521 Race St., Philadelphia, Pa.
Helme & McIlhenny, 17th and Clearfield Sts., Philadelphia, Pa.
Lambert Meter Co., Inc., Bush Terminal Bldg., Brooklyn, N. Y.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Metric Metal Works, Erie, Pa.
Pittsburgh Meter Co., East Pittsburgh, Pa.
Precision Instrument Co., 21 Halsey St., Newark, N. J.
Republic Flow Meters Co., 56 S. Washington Blvd., Chicago, Ill.
Rotary Meter Co., 52 Vanderbilt Ave., New York, N. Y.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
Taylor Instrument Companies, Rochester, N. Y.
The Brown Instrument Co., Philadelphia, Pa.
The Connersville Blower Co., Connersville, Ind.
The Cutler-Hammer Mfg. Co., Milwaukee, Wis.
The Sprague Meter Co., Bridgeport, Conn.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.

METERS (Air and Steam)
Pittsburgh Meter Co., East Pittsburgh, Pa.
Republic Flow Meters Co., 565 Washington Blvd., Chicago, Ill.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

METER CONNECTIONS, SEALS, Etc.
American Meter Co., Inc., New York, N. Y.
Cleveland Gas Meter Co., Cleveland, Ohio
S. R. Dresser Mfg. Co., Bradford, Pa.
Equitable Meter Co., Pittsburgh, Pa.
Helme & McIlhenny, 17th and Clearfield Sts., Philadelphia, Pa.
D. McDonald & Co., Albany, N. Y.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Lattimer Stevens Co., Columbus, Ohio
The Sprague Meter Co., Bridgeport, Conn.

Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.
Pittsburgh Meter Co., East Pittsburgh, Pa.

METERS (Steam, Condensation, Oil, Hot and Cold Water)
Pittsburgh Meter Co., Gasoline, East Pittsburgh, Pa.
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.
Republic Flow Meter Co., 563 Washington Blvd., Chicago, Ill.

METER PROVERS
American Meter Co., Inc., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
John J. Griffin & Co., Philadelphia, Pa.
Helme & McIlhenny, 17th and Clearfield Sts., Philadelphia, Pa.
Lambert Meter Co., Inc., Bush Terminal Bldg., Brooklyn, N. Y.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Pittsburgh Meter Co., East Pittsburgh, Pa.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.

METER SEALS & ADJUSTABLE CONNECTIONS
The Lattimer-Stevens Co., Columbus, O.

METER SHELF
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
The Lattimer-Stevens Co., Columbus, O.

OFFICE LABOR SAVING DEVICES
Addressograph Co., Chicago, Ill.
Burroughs Adding Machine Co., Detroit Mich.
Elliott-Fisher Co., Harrisburg, Pa.
Kalamazoo Loose-Leaf Binder Co., Kalamazoo, Mich.
Library Bureau, Boston, Mass.
Monroe Calculating Machine Co., Woolworth Bldg., New York, N. Y.
Remington Typewriter Co., 374 Broadway, New York, N. Y.
Underwood Typewriter Co., Vesey St., New York, N. Y.

OIL (Diaphragm)
John J. Griffin & Co., 1521 Race St., Philadelphia, Pa.
Superior Meter Co., Brooklyn, N. Y.

OVENS (Baking and Cooking)
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
Famous Oven Manufacturing Co., 110 W. 42nd S., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
E. E. Steiner & Co., Inc., 20 Orange St., Newark, N. J.
The G. S. Blodgett Co., Burlington, Vt.
The Crandall-Pettee Co., Hudson St., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Ohio State Stove & Mfg. Co., Columbus, Ohio
The Union Steel Products Co., Ltd., Albion, Mich.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

OVENS (Annealing, Japanning, Drying, Core, etc.)
Famous Oven Manufacturing Co., 110 W. 42nd St., New York, N. Y.
Gehnrich Indirect Heat Oven Co., Inc., 62 Franklin Ave., Brooklyn, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
E. E. Steiner & Co., Inc., 20 Orange St., Newark, N. J.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
The Union Steel Products Co., Ltd., Albion, Mich.
Young Bros. Co., Detroit, Mich.

OVENS (Warming)
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
The G. S. Blodgett Co., Burlington, Vt.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Union Steel Products Co., Ltd., Albion, Mich.

PACKINGS (Rods, Plunger, Piston and Flange)
Johns-Manville Inc., Madison Ave. and 41st St., New York, N. Y.

PAINTS (Metal Protective, Gas Holder, Acid Resisting, Coal Tar Pitch, Gas Resisting, Marine)
The Sherwin-Williams Co., Cleveland, Ohio, New York, N. Y.

PHOTOMETERS
American Meter Co., Inc., New York, N. Y.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Nathaniel Tufts Meter Works, Boston, Mass.

PIPE
Davis & Farnum Mfg. Co., Waltham, Mass.
Grinnell Co., Inc., Providence, R. I.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Riter-Conley Co., Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
United Lead Co., 111 Broadway, New York, N. Y.

PIPE CASTINGS AND SPECIALS
Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
Davis & Farnum Mfg. Co., Waltham, Mass.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Isbell-Porter Co., Newark, N. J.
Gas Engineering Co., Ingram Ave., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The Stacey Manufacturing Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

PIPE CLAMPS AND SLEEVES
Davis & Farnum Mfg. Co., Waltham, Mass.
S. R. Dresser Mfg. Co., Bradford, Pa.
National Machine Works, Sheffield & North Aves., Chicago, Ill.

PIPE PACKING
Celite Products Co., 11 Broadway, New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
United Lead Co., 111 Broadway, New York, N. Y.

PIPE TOOLS (Caulking, Cutting, Tapping)
Grinnell Co., Inc., Providence, R. I.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Safety Gas Main Stopper Co., 943 Fulton St., Brooklyn, N. Y.
United Lead Co., 111 Broadway, New York, N. Y.

PLATE WARMERS
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Duparquet, Huot & Moneuse Co., 108 W. 22nd St., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave. Brooklyn, N. Y.

PORCELAIN ENAMEL PARTS (Stoves, Lamps, Linings, Stamping and Spinnings)
Baltimore Enamel & Novelty Co., Baltimore, Md.
Chicago Vitreous Enamel Product Co., 1407 So. 55th Court, Cicero, Ill.
Eclipse Gas Stove Co., Rockford, Ill.
The Enamel Products Co., Cleveland, Ohio
The Porcelain Enamel & Mfg. Co., Baltimore, Md.
The Union Steel Products Co., Ltd., Albion, Mich.

PORCELAIN ENAMEL PLANTS (Installers)
The Porcelain Enamel & Mfg. Co., Baltimore, Md.

PRESSURE GAUGES
American Meter Co., Inc., New York, N. Y.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
Grinnell Co., Inc., Providence, R. I.
Maryland Meter Works, Baltimore, Md.
D. McDonald Co., Aibany, N. Y.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Brown Instrument Co., Phila., Pa.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Gas Machinery Co., Cleveland, Ohio
The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
Taylor Instrument Cos., Rochester, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.
Nathaniel Tufts Meter Works, Boston, Mass.

PRESSURE GAUGES (Boiler, Naphtha, Oil, Steam. Tar)
M. T. Davidson Co., 154 Nassau St., New York. N. Y.

PYROMETERS (Indicating and Recording)
Taylor Instrument Cos., Rochester, N. Y.

PULMOTORS
American Atmos Corporation, 105 West 40th St. New York, N. Y.

PUMPING ENGINES

PUMPS
M. T. Davidson Co., 154 Nassau St., New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
Nathaniel Tufts Meter Works, Boston, Mass.
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y. (Centrifugal, Reciprocating & Sump).
Superior Meter Co., Brooklyn, N. Y.
The Connersville Blower Co., Connersville, Ind.
The Western Gas Construction Co., Fort Wayne, Ind.
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

PURIFIERS
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Newark, N. J.
Gas Machinery Co., Cleveland, Ohio
Isbell-Porter Co., Newark, N. J.
Riter-Conley Co., Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Manufacturing Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

PURIFYING MATERIALS
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Eph Lyon, Trust Company Bldg., Franklin, Pa.
Gas Purifying Materials Co., Long Island City, N. Y.
J. F. Henderson Co., 1707 Commonwealth Bldg., Pittsburgh, Pa.
Iron Hydroxide Co., Paschall Station, Philadelphia, Pa.

PYROMETERS
The Brown Instrument Co., Phila., Pa.

RADIANT HEATERS
General Gas Light Co., New York—Kalamazoo,
J. H. Grayson Mfg. Co., Athens, Ohio.
Kennedy-Toombs, Inc., 126 Eleventh Ave., New York, N. Y.
Welsbach Company, Gloucester, N. J.
Roberts and Mander Stove Co., Philadelphia, Pa.

RADIATORS
American Gas Appliance Co., 108 Lawrence St., Brooklyn, N. Y.
Cabco Sales Co., Gowanda, N. Y.
James B. Clow & Sons, Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eriez Stove & Mfg. Co., Erie, Pa.
Grinnell Co., Inc., Providence, R. I.
Hugo Manufacturing Co., West Duluth, Minn.
Kidde & Co., 169 Chambers St., New York, N. Y.
J. B. Slattery & Bro., Inc., 108-110 Lawrence St., Brooklyn, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Mead Gas Heater Co., Delawanna, N. J.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.

RANGES (Domestic)
A-B Stove Co., Battle Creek, Mich.
American Stove Co., St. Louis, Mo.
Century Stove & Mfg. Co., Johnstown, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Chambers Manufacturing Co., Shelbyville, Ind.—(Fireless type)
The Bartlett Co., Inc., Philadelphia, Pa.
Comstock-Castle Stove Co., Quincy, Ill.
Abram Cox Stove Co., Philadelphia, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Dangler Stove Co. Div., Cleveland, Ohio
Eclipse Gas Stove Co. Div., Rockford, Ill.
Eriez Stove & Mfg. Co., Erie, Pa.
Estate Stove Co., Hamilton, Ohio
Gribben & Sexton Co., Chicago, Ill.
Malleable Iron Range Co., Beaver Dam, Wis.
National Stove Co. Div., Lorain, Ohio
New Process Stove Co. Div., Cleveland, Ohio
Quick Meal Stove Co. Div., St. Louis, Mo.
Rathbone, Sard & Co., Albany, N. Y.
Reliable Stove Co. Div., Cleveland, Ohio
Roberts & Mander Stove Co., Philadelphia, Pa.
Scott Gas Appliance Mfg. Co., Commercial House, Pottstown, Pa.
J. M. Sherwood Co., New York, N. Y.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Champion Stove Co., Cleveland, Ohio
The Eclipse Stove Co., Mansfield, Ohio
The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
The Michigan Stove Co., Detroit, Mich.
The Ohio State Stove & Mfg. Co., Columbus, Ohio
The Trenkamp Stove & Mfg. Co., Cleveland, O.
The Peninsular Stove Co., Detroit, Mich.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.

Union Stove Works, 70 Beekman St., New York, N. Y.
Vesta Gas Range & Mfg. Co., Chattanooga, Tenn.
Walker & Pratt Mfg. Co., Boston, Mass.
Weir Stove Co., Taunton, Mass.

RANGES (Hotel)
American Stove Co., St. Louis, Mo.
Geo. M. Clark & Co. Div., Chicago, Ill.
Comstock-Castle Stove Co., Quincy, Ill.
Abram Cox Stove Co., Philadelphia, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Duparquet, Huot & Moneuse Co., 108 W. 22nd St., New York, N. Y.
Eclipse Gas Stove Co. Div., Rockford, Ill.
Estate Stove Co., Hamilton, Ohio
The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Roberts & Mander Stove Co., Philadelphia, Pa.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Michigan Stove Co., Detroit, Mich.

REFRACTORY MATERIALS
J. H. Gautier & Co., Jersey City, N. J.
Harbison-Walker Refractories Co., Pittsburgh, Pa.
Johns-Manville Inc., New York, N. Y.
Quigley Furnace Specialties Co., 26 Cortlandt St., New York, N. Y.
Laclede-Christy Clay Products Co., St. Louis, Mo.
Mount Union Refractories Co., Mount Union, Pa.
Riter-Conley Co., Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
G. F. Schmidt, Chicago, Ill.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.

REGULATORS (Governors)
The Chaplin-Fulton Mfg. Co., Pittsburgh, Pa.
Broadway, New York, N. Y.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
Gas Machinery Co., Cleveland, Ohio
Isbell-Porter Co., Newark, N. J.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Reynolds Gas Regulator Co., Anderson, Ind.
Steere Engineering Co., Detroit, Mich.
The Brown Instrument Co., Philadelphia, Pa.
The Connersville Blower Co., Cornnersville, Ind.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Sprague Meter Co., Bridgeport, Conn.
The Western Gas Construction Co., Fort Wayne, Ind.
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

REDUCING VALVES (Gas, Air, Steam, Water)
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.

REPAIRS (Gas Meters and Appliances)
Helme & McIlhenny, 17th and Clearfield Sts., Philadelphia, Pa.
Maryland Meter Works, Baltimore, Md.
Superior Meter Co., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.

RETORTS
Gas Machinery Co., Cleveland, Ohio
J. H. Gautier & Co., Jersey City, N. J.
Harbison-Walker Refractories Co., Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
Riter-Conley Co., Pittsburgh, Pa.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The West Gas Improvement Co. of America, 130 Nassau St., New York, N. Y.

ROOFING
Johns-Manville Inc., New York, N. Y.

ROOF CEMENTS
The Sherwin-Williams Co., Cleveland, Ohio, New York, N. Y.
John-Manville Inc., New York, N. Y.

RUST PREVENTIVE
Superior Laboratories, Grand Rapids, Mich.

SCRUBBERS
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
Isbell-Porter Co., Newark, N. J.
Riter-Conley Co., Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Koppers Co., Pittsburgh, Pa.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Manufacturing Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

SELLING AGENTS
J. M. Sherwood Co., 154 Chambers St., New York, N. Y.
Kidde & Co., 103 Park Ave., New York, N. Y.
Will W. Barnes, Tucson, Ariz.

SEPARATORS (Oil and Steam)
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York City.

SERVICE BOXES, CLAMPS, Etc.
Davis & Farnum Mfg. Co., Waltham, Mass.
Grinnell Co., Inc., Providence, R. I.
Hays Mfg. Co., Inc., Erie, Pa.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.

SERVICE VALVES (Gate Valves)
The Ludlow Valve Mfg. Co., Ft. Adams St., Troy, N. Y.

SOAPS (Industrial)
The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

SPECIALS—CAST IRON
The Western Gas Construction Co., Fort Wayne, Ind.

STEAM TRAPS
Plant Engineering & Equipment Co., Inc., (Corliss Valve) 192 Broadway, New York, N. Y.
John-Manville Inc., New York, N. Y.

STILLS (Benzol, Toluol)
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
The Bartlett Hayward Co., Baltimore, Md.
The Koppers Co., Pittsburgh, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

STOPPERS (Gas main)
Safety Gas Main Stopper Co., 943 Fulton St., Brooklyn, N. Y.

STOVES (Confectioners, Laundry, Tailor)
A-B Stove Co., Battle Creek, Mich.
American Stove Co., St. Louis, Mo.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
The General Gas Appliance Co., 103 Park Ave., Brooklyn, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

STRAINERS (Gas, Air, Steam, Water)
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.

STRUCTURAL STEEL WORKS (See Holders)

TANKS (Ammonia, Oil, Water)

Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Gas Machinery Co., Cleveland, Ohio
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Riter-Conley Co., Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Manufacturing Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

TAR DEHYDRATION

The Sharples Specialty Co., New York, N. Y.

THERMOMETERS

Brown Instrument Co., Philadelphia, Pa.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
Grinnell Co., Inc., Providence, R. I.
Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
Gas Instrument Co., Ingram Ave., Trenton, N. J.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
Taylor Instrument Co., Rochester, N. Y.
The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.

THERMOSTATS

Brown Instrument Co., Philadelphia, Pa.
Gas Machinery Co., Cleveland, Ohio
Kidde & Co., 169 Chambers St., New York, N. Y.
Minneapolis Heat Regulator Co., Minneapolis, Minn.
B. Ryan & Co., 372 W. 15th St., New York, N. Y.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The H. A. Wilson Co., 97 Chestnut St., Newark, N. J.

THERMO VALVES

Brown Instrument Co., Philadelphia, Pa.
Pittsburgh Water Heater Co., Pittsburgh, Pa.
Robertshaw Mfg. Co., Youngwood, Pa.

THORIUM

Welsbach Co., Gloucester, N. J.

TRENCH WORK

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Safety Gas Main Stopper Co., 943 Fulton St., Brooklyn, N. Y.

TURBINE (Steam)

L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

VALVES

Claus Automatic Gas Cock Co., Milwaukee, Wis.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
Grinnell Co., Inc., Providence, R. I.
Isbell-Porter Co., Newark, N. J.
Plant Engineering & Equipment Co., Inc., 191 Broadway, New York, N. Y.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Ludlow Valve Mfg. Co., Ft. Adams St., Troy, N. Y.
The Stacey Manufacturing Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

VALVES (Needle Valves for Gas Stoves)

Acme Brass Works, Detroit, Mich.
Peninsular Brass Works, Detroit, Mich.
The McRae & Roberts Co., Detroit, Mich.
The Roberts Brass Mfg. Co., Detroit, Mich.

VARNISHES (Insulating and Compounds)

The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

WATER GAS LININGS

Laclede Christy Clay Products Co., St. Louis, Mo.

WATER HEATERS

A-B Stove Co., Battle Creek, Mich.
American Heater Corporation, St. Louis, Mo.
Bartlett & Co., Inc., Philadelphia, Pa.
Bastin Morley Co., La Porte, Ind.
Geo. M. Clark & Co. Div., Chicago, Ill.
Abram Cox Stove Co., Philadelphia, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.
The Elliott Water Heating Co., Brooklyn, N. Y.
Estate Stove Co., Hamilton, Ohio
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Humphrey Co. Div., Kalamazoo, Mich.
Kidde & Co., 169 Chambers St., New York, N. Y.
Lawson Mfg. Co., Pittsburgh, Pa.
Madadon Mfg. Co., Cambridge, Mass.
The Kompak Company, New Brunswick, N. J.
New Process Stove Co. Div., Cleveland, Ohio.
Peninsular Stove Co., Detroit, Mich.
Philadelphia Stove Co., Philadelphia, Pa.
Pittsburgh Water Heater Co., Pittsburgh, Pa.
B. Ryan & Co., New York, N. Y.
The Trenkamp Stove & Mfg. Co., Cleveland, O.
The Sands Mfg. Co., Cleveland, Ohio
Rathbone, Sard & Co., Albany, N. Y.
Reliable Stove Co. Div., Cleveland, Ohio
Ruud Mfg. Co., Pittsburgh, Pa.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Cleveland Heater Co., Cleveland, Ohio
The Hoffman Heater Co., Lorain, Ohio
The Lovekin Water Heater Co., 39 Laurel St., Philadelphia, Pa.
The Michigan Stove Co., Detroit, Mich.
The Sands Mfg. Co., Cleveland, O.
Toombs Mfg. Co., Geneva, Ill.

WATER SOFTENERS

The Refinite Co., Inc., Omaha, Neb.

WATER STILLS (Gas Heated)

The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
Young Bros. Co., Detroit, Mich.

WELDED STEEL PIPE

The Bartlett Hayward Co., Baltimore, Md.
The Western Gas Construction Co., Fort Wayne, Ind.
Steere Engineering Co., Detroit, Mich.

WOOD PRESERVATIVES

The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

Employment Bureau

SERVICES OFFERED

WANTED—Position as Industrial Power and Fuel Engineer. Technical engineer and salesman of excellent qualifications for industrial power and fuel sales. Now employed $3000. Address—A. G. A.
Key No. 111

WANTED—Position as executive in a local office of a gas or a combination gas and electric company. Have had practical experience in all branches of commercial utility work. Have been successful in dealing with the public and promoting good will of utility companies. Educated in commercial and accounting methods as compiled by the N. C. G. A. and N. E. L. A. Well acquainted in office routine and very exact on details and execution of same. Address A. G. A.
Key No. 114

WANTED—A position with a gas appliance company having need for an all around man experienced in development and selling. Can furnish best of references. Address—A. G. A.
Key No. 116

POSITION WANTED—As General Superintendent or Engineer of good-sized company, by well known technical graduate of 18 years connection with the gas business. Experienced in every branch of the industry and has made good. Has been superintendent of one large company and manager of other smaller ones. Has himself laid mains, made gas, set ranges, purchased and sold appliances, etc., so that he knows the difficulties and the things to avoid. Noted for his ability to handle men. Well read and up-to-date in every particular. Address—A. G. A.
Key No. 117

WANTED—Position as manager in medium size town or as gas engineer by technical man with 9 years experience in all branches. Both syndicate and private operation. Has shown exceptionally good results. Address A. G. A.
Key No. 118

WANTED—Position as manager or superintendent with gas company in North Eastern States. Eight years experience in both coal and water gas. Married. Good references. Address A. G. A.
Key No. 119

WANTED—Position as General Manager of Gas or Gas and Electric Company in city of size or as assistant to chief executive in very large company. Operation, management, finance, rates and capitalization by Public Utility engineer of my broad experience. Address A. G. A.
Key No. 120.

WANTED—Position as assistant to engineer of small syndicate of gas and electric companies. Have had four years experience in engineering department of a holding corporation. Address A. G. A.
Key No. 121

WANTED—Position where nearly twenty years intensive study of carbonization, works operation, by-product recovery, and all details of apparatus and machinery peculiar to the manufacturing end of the business can be utilized to mutual advantage. Address A. G. A.
Key No. 122

WANTED—Position as Manager of a gas property, by a man who left such a position two months ago to become the Manager of a manufacturing company. Is 34 years of age; technical graduate, and experienced in all branches of the gas business Reports and data available from past experience; also the best of reference. Address A. G. A.
Key No. 123

EXECUTIVE AVAILABLE—An executive who has had some years experience in construction, operation and management of gas, electric power and traction properties will soon be open for engagement. Is specially competent in management of such properties in all branches including fare, rate, franchise, and valuation proceedings, labor matters and public relation. Will show record of successful work for fifteen years back with proofs to anyone interested. Address A. G. A.
Key No. 124

GAS APPLIANCE SALESMAN—Especially trained in water and house heating; 15 years' experience; desires selling position, either road or local, with aggressive appliance manufacturer or gas company. Will furnish best selling reference. Drawing account against commission. Address A. G. A.
Key No. 125

WANTED—Position as salesman or sales manager with reliable gas or electric appliance manufacturer preferred. Address A. G. A.
Key No. 126

WANTED—Position as manager or sales manager of gas, electric or combined property or group of properties. Now employed by company with which applicant has been associated for several years. Excellent reasons for wishing to make change which, together with highest references will be furnished to owners interested in securing thoroughly competent executive. Address A. G. A.
Key No. 127

WANTED—Position as Superintendent of small company, in town of about 100,000 population or as Assistant Superintendent of some large holding company. New England or Central States preferred. Married, middle age, at present employed and can furnish good reference. Address A. G. A.
Key No. 128

WANTED—Position as General Superintendent or Superintendent of Manufacture, coal or water gas; life experience in same, at present superintendent of small plant; A1 references. Salary $200 per month. Address A. G. A.
Key No. 129

WANTED—Position as Manager of property in city of 20,000-25,000. Thorough knowledge of all departments, gained from twenty years' experience. At present employed, but desirous of change. Ample references furnished as to character and ability. Address A. G. A.
Key No. 130

MECHANICAL ENGINEER—28 years old, 4½ years experience in drafting, designing, machine shop and construction work, including 2½ years in gas and chemical business, desires position as Assistant Superintendent or Plant Engineer. 15 months in Army. Junior member A. S. M. E. Address A. G. A.
Key No. 132

Wanted—Position as Superintendent or Assistant Superintendent in medium sized W. G. Plant in vicinity of New York, by American, 26 years of age. Technical education—5 years in Gas Business. At present Superintendent of plant in Western City. Change desired for betterment and desire to return to East. Address A. G. A.
Key No. 133

Wanted—Position by a man of large general experience in gas business who has made a special study of sales promotion problems, and who would prove valuable as an assistant to a busy executive in such department. Address A. G. A.
Key No. 134

MICHIGAN GAS ASSOCIATION ANNUAL MEETING

Hotel Statler,

September 29th and 30th

The Rates—European Plan

Style Room			*Per Day*
A	Room with shower bath only,	for 1 person	$3.00 or $3.50
B	" " tub and shower bath,	for 1 person	4.00 to 7.00
C	" " shower only	2 persons double bed	5.00
D	" " shower only	2 persons twin beds	5.50
E	" " shower only	3 persons two beds	7.50
F	" " tub and shower	2 persons double bed	6.00 to 9.50
G	" " " " "	2 " twin beds	7.00 to 10.00
H	" " " " "	4 " three beds	10.00 to 12.00
I	" " " " "	5 " five beds	12.50
J	" " " " "	6 " six beds	15.00

AMERICAN GAS ASSOCIATION, INC.

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